SLV-ED1PL/ED4PL/ED7KR/ED8PL

RMT-V247B/V248

SERVICE MANUAL

Korean Model
SLV-ED7KR

Philippine Model
SLV-ED1PL/ED4PL/ED8PL

Ver 1.0 1998. 08

Photo: SLV-ED1PL

- **Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENTS VI for MECHANICAL ADJUSTMENTS. (9-921-647-11)**

S MECHANISM

Hi-Fi

* The abbreviations of ED1, ED4, ED7 and ED8 contained in this service manual are indicated when these models are common to all their corresponding models as given below.

Abbreviated model name	ED1	ED4	ED7	ED8
All model names SLV-	ED1PL	ED4PL	ED7KR	ED8PL

SPECIFICATIONS

System

Format
VHS NTSC standard
Video recording system
Rotary head helical scanning FM system
Video heads
Double azimuth two heads
Video signal
NTSC color, EIA standards
Tape speed
SP: 33.35 mm/s
EP: 11.11 mm/s
LP: 16.67 mm/s, playback only
Maximum recording playback time
8 hrs. in EP mode (with T-160 tape)
Fast-forward and rewind time
Approx. 3 min. (with T-120 tape)

Tuner section

Channel coverage
VHF 2 to 13
UHF 14 to 69
CATV A-8 to A-1, A to W, W+1 to W+84
Antenna
75-ohm antenna terminal for VHF/UHF

Inputs and outputs

LINE-1 IN
VIDEO IN, phono jack (1)
Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO IN, phono jack (1) (ED1/ED4)
AUDIO IN, phono jack (2) (ED7/ED8)
Input level: 327 mVrms
Input impedance: more than 47 kilohms
LINE-2 IN (ED7/ED8)
VIDEO IN, phono jack (1)
Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO IN, phono jack (2)
Input level: 327mVrms
Input impedane: more than 47 kilohms
LINE OUT
VIDEO OUT, phono jack (1)
Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO OUT, phono jack (1) (ED1/ED4)
AUDIO OUT, phono jack (2) (ED7/ED8)
Standard output: 327 mVrms
Load impedance; 47 kilohms
Output impedance: less than 10 kilohms

Timer section

Clock
Quartz locked
Timer indication
12-hour cycle
Timer setting
8 programs per month (max.)
Power back-up
Built-in self-charging capacitor
Back-up duration: up to 1 hour at a time

General

Power requirements
110 – 240 V AC, 50/60 Hz
Power consumption
19W (ED1/ED4)
22W (ED7/ED8)
Operating temperature
5 ˚C to 40 ˚C
Storage temperature
–20 ˚C to 60 ˚C

– Continued on next page –

VHS VIDEO CASSETTE RECORDER

MICROFILM

SONY®

Dimensions
Approx. 355 × 96 × 285 mm (w/h/d): (ED1)
Approx. 430 × 100 × 286 mm (w/h/d): (ED4/ED7/ED8)
including projecting parts and controls
Mass
Approx. 3.7 kg: (ED1)
Approx. 4.2 kg: (ED4/ED7/ED8)

Supplied accessories
Remote commander (1)
R6 (size AA) batteries (2)
75-ohm coaxial cable with F-type connectors (1)
Plug adaptor (1) (ED1/ED4/ED8)

Design and specifications are subject to change without notice.

• Feature Difference

SLV- / FEATURE	ED1PL	ED4PL	ED7KR	ED8PL
HEAD/CH	2/2	4/4	4/6	4/6
RCA REAR LINE IN/OUT	○/○	○/○	○(3P)/○(3P)	○(3P)/○(3P)
RCA FRONT LINE IN	×	×	○(3P)	○(3P)
CLICK SHUTTLE	×	×	×	○
REMOTE COMMANDER RMT-	V248	V248	V247B	V247B

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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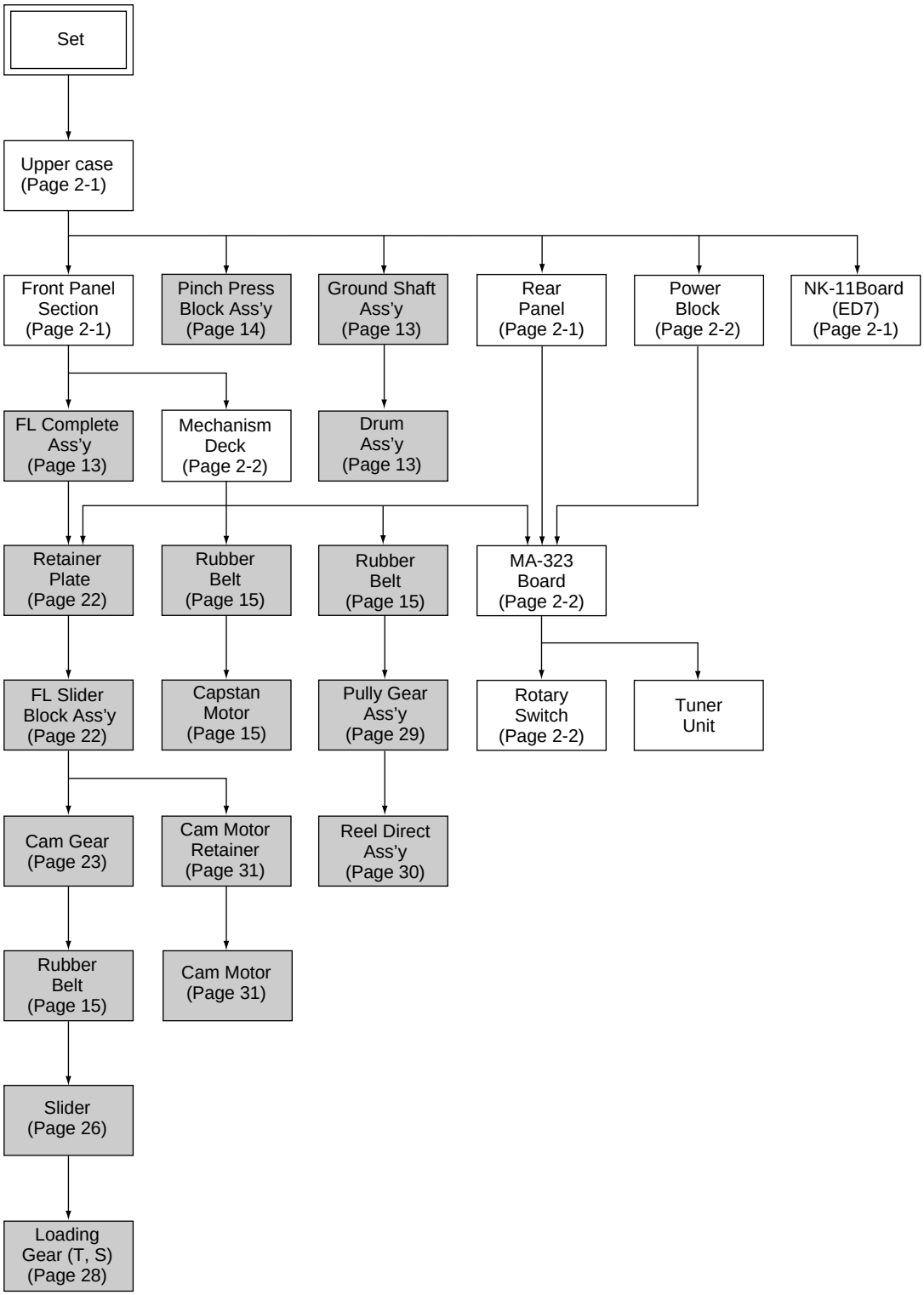
SERVICE NOTE

1. DISASSEMBLY

• This set can be disassembled in the order shown below.

Note: Pages in ▭ indicated pages in the SERVICE MANUAL.
Pages in ▭ indicated pages in the VHS MECHANICAL ADJUSTMENT MANUAL VI.


Set
Upper case (Page 2-1)
Front Panel Section (Page 2-1)
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Rubber Belt (Page 15)
Cam Motor (Page 31)
Slider (Page 26)
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SECTION 1
GENERAL

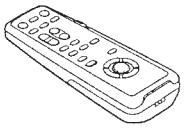
This section is extracted from SLV-ED1PL instruction manual.

Step 1

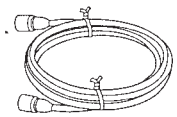
Unpacking

Check that you have received the following items with the VCR:

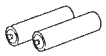
- Remote commander



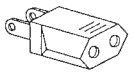
- 75-ohm coaxial cable with F-type connectors



- Size AA (R6) batteries



- Plug adaptor



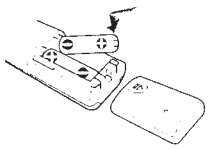
Step 2

Setting up the remote commander

Inserting the batteries

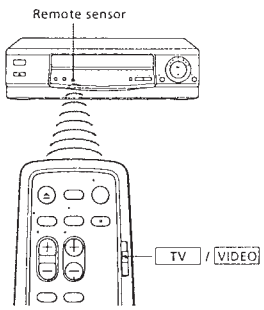
Insert two size AA (R6) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.

Insert the negative (–) end first, then push in and down until the positive (+) end clicks into positon.



Using the remote commander

You can use this remote commander to operate this VCR and a Sony TV. Buttons on the remote commander marked with a dot (•) can be used to operate your Sony TV. If the TV does not have the ⊠ symbol near the remote sensor, this remote commander will not operate the TV.



To operate	Set TV / VIDEO to
the VCR	VIDEO and point at the remote sensor on the VCR
a Sony TV	TV and point at the remote sensor on the TV

Notes

- With normal use, the batteries should last about three to six months.
- If you do not use the remote commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage.
- Do not use a new battery with an old one.
- Do not use different types of batteries.

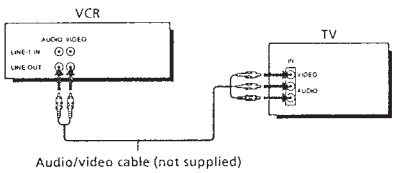
Step 3

Hookup

Audio/video (A/V) hookup

If your TV has audio/video (A/V) input jacks, you will get a better picture and sound when you hook up your VCR using these connections. If your TV doesn't have A/V inputs, see the following page for antenna hookup.

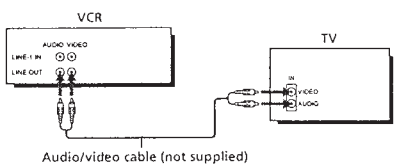
A Use this hookup if your TV has stereo jacks



Tip

- If you want to use the Trinitron TV Synchro Play function (see page 20), this connection is necessary. (If your TV has two or more inputs, connect the audio/video cable to the VIDEO IN 1 jacks.)

B Use this hookup if your TV doesn't have stereo jacks

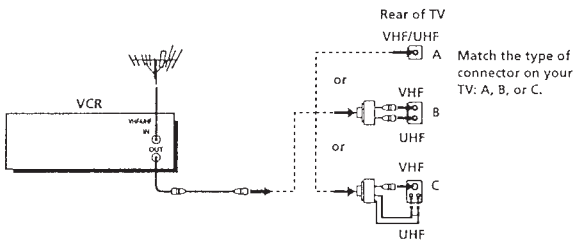


Antenna hookup

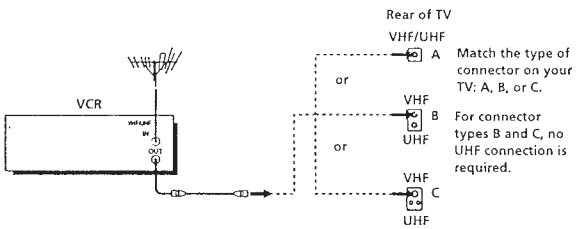
Make the following connections when you're using an antenna.

A Use this hookup if you're using:

- VHF/UHF antenna (you get channels 2–13 and channels 14 and higher)
- UHF-only antenna (you get channels 14 and higher)
- Separate VHF and UHF antennas



B Use this hookup if you're using a VHF-only antenna (you get channels 2–13 only)



If you cannot connect your antenna cable to the VCR directly

If your antenna cable is a flat cable (300-ohm twin lead cable), attach an external antenna connector (not supplied) so you can connect the cable to the VHF/UHF IN connector. If you have separate cables for VHF and UHF antennas, you should use a U/V band mixer (not supplied). For details, see page 37.

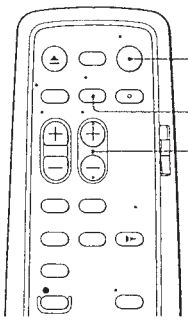
continued

Step 3: Hookup (continued)

Setting the RF unit

When connecting the VCR to the TV using only the antenna cable, you must set the RF UNIT switch on the rear of the VCR so that the TV can receive the correct signal from the VCR.

If you made A/V connections (page 6) you can skip this step.



1 RF UNIT CH3 CH4 — Set the RF UNIT switch on the rear of the VCR to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.

2 • POWER — Press POWER to turn on the VCR.

3 • TV/VIDEO — Press TV/VIDEO on the remote commander to turn on the VIDEO indicator in the VCR's display window.

4 • CH — Press CH +/– to display a channel number in the display window. Select an active channel number in your area.

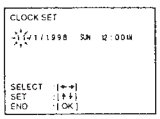
5 Turn on your TV and set it to the channel you selected in step 1 (channel 3 or 4).

The selected TV channel broadcast appears on the TV screen. If the channels change when you press CH +/–, you have made the correct setting.

Whenever you use the VCR, set the TV to the channel selected in step 1.

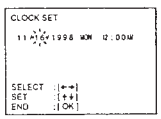
Step 4: Setting the clock (continued)

3 Press ↑/↓ to set the month.

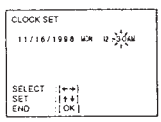


4 Press → to flash the day and press ↑/↓ to set the day.

The day of the week is set automatically.



5 Set the year, hour and minutes in sequence, using → to flash the item to be set, and ↑/↓ to select the digits.



6 Press OK to start the clock.

Tip
- To change the digits during setting, press ← to return to the item to be changed, and select the digits using ↑/↓.

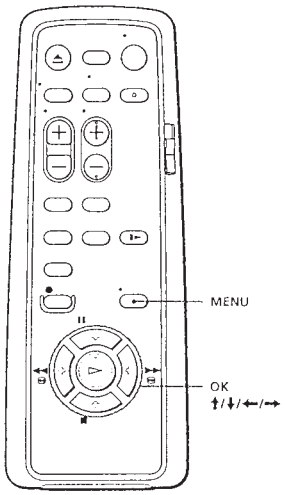
Note
- The menu disappears automatically if you don't proceed for more than a few minutes.

Step 4

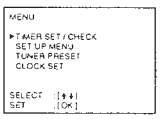
Setting the clock

Set the time and date to use the timer feature for recording programs.

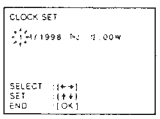
Before you start...
- Turn on the VCR and the TV.
- Set the TV to the VCR channel (channel 3 or 4). If your TV is connected to the VCR using A/V connections, set the TV to video input.
- Press TV/VIDEO to display the VIDEO indicator in the VCR's display window.



1 • MENU — Press MENU.



2 Press ↑/↓ to move the cursor (►) to CLOCK SET, then press OK.



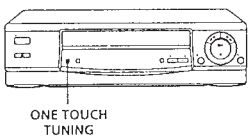
continued

Step 5

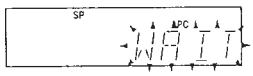
Presetting channels

First, we recommend that you preset the receivable channels in your area using one touch tuning. You can also preset the channels automatically using the menu. Then, if some channels could not be preset automatically, set them manually; if there are any unwanted channels among the preset ones, you can disable the channels.

Presetting all receivable channels using one touch tuning



1 ONE TOUCH TUNING — Press ONE TOUCH TUNING on the VCR for more than 3 seconds. The VCR starts the channel presetting.



The WAIT indicator goes off when all receivable channels are preset.

To check to see if the channels are preset correctly

Set the TV to the video channel and press CHANNEL +/– on the VCR. If the TV screen changes to a different program each time you press CHANNEL +/–, the channels are preset correctly.

Tip
- To stop one touch tuning, press ONE TOUCH TUNING or ■ STOP on the VCR during the setting.

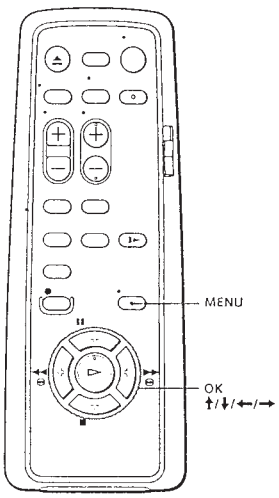
continued

Step 5: Presetting channels (continued)

Presetting all receivable channels automatically

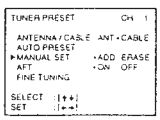
Before you start...

- Turn on the VCR and the TV.
- Set the TV to the VCR channel (channel 3 or 4). If your TV is connected to the VCR using A/V connections, set the TV to video input.
- Press TV/VIDEO to display the VIDEO indicator in the VCR's display window.



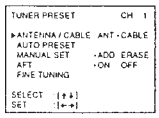
1 ·MENU — Press MENU.

2 Press ↑/↓ to move the cursor (►) to TUNER PRESET, then press OK.

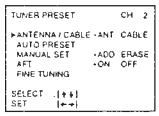


3 Press ↑/↓ to select ANTENNA/CABLE.

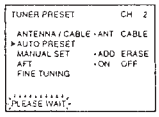
4 • To preset cable TV channels:
Press ←/→ to set ANTENNA/CABLE to CABLE.



• To preset VHF and UHF channels:
Press ←/→ to set ANTENNA/CABLE to ANT.



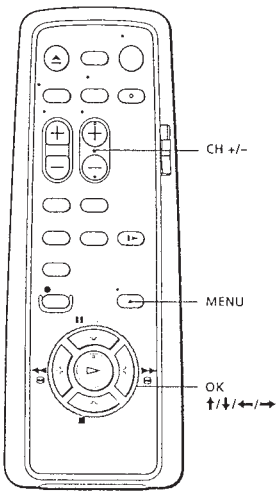
5 Press ↑/↓ to select AUTO PRESET, then press OK.
All receivable channels are preset in numerical sequence. When no more receivable channels can be found, presetting stops and the picture from the lowest numbered channel is displayed on the TV screen.



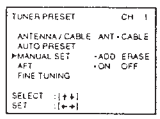
continued

Step 5: Presetting channels (continued)

Presetting/disabling channels manually

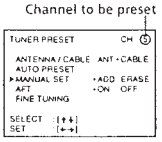


1 ·MENU — Press MENU and select TUNER PRESET, then press OK.



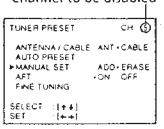
2 ·CH — • To preset a channel:
1 Press CH +/– to select the channel number.
2 Press ←/→ to set MANUAL SET to ADD.

Channel to be preset



·CH — • To disable a channel:
1 Press CH +/– to select the channel number.
2 Press ←/→ to set MANUAL SET to ERASE.

Channel to be disabled



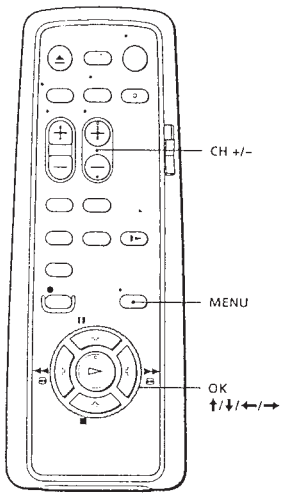
3 Repeat step 2 to preset or disable channels as required, then press OK.

continued

Step 5: Presetting channels (continued)

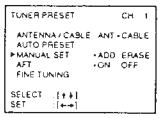
If the picture is not clear

Normally, the Auto Fine Tuning (AFT) function automatically tunes in channels clearly. If, however, the picture of a channel is not clear, you can also use the manual tuning function.



1 • MENU

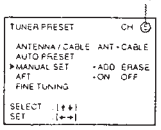
Press MENU and select TUNER PRESET, then press OK.



2 • CH

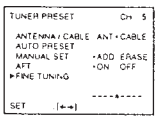
Press CH +/– to select the channel you want to fine-tune.

Selected channel



3

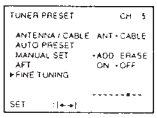
Press ↑/↓ to select FINE TUNING. The fine tuning meter appears.



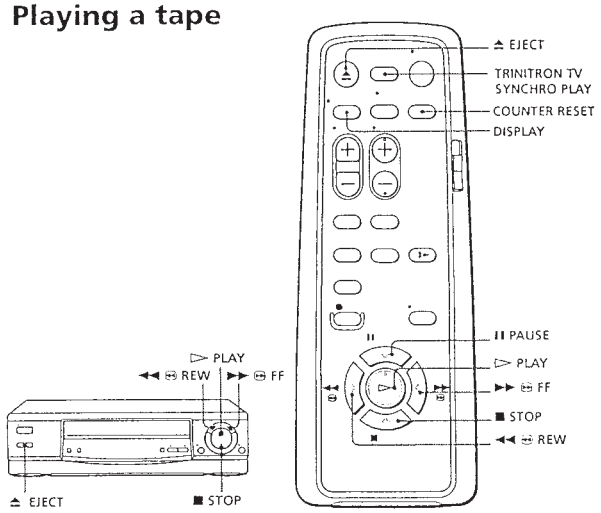
4

Press ←/→ to adjust to a clearer picture, then press OK.

Note that the AFT setting switches to OFF.



Playing a tape



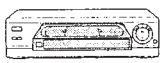
1

Turn on your TV and set it to the video channel.

2

Insert a tape.

The VCR turns on and starts playing automatically if you insert a tape with its safety tab removed.



3

Press ▷ PLAY.

When the tape reaches the end, it will rewind automatically.

Additional tasks

To	Press
Stop play	■ STOP
Pause play	❚❚ PAUSE
Resume play after pause	❚❚ PAUSE or ▷ PLAY
Fast-forward the tape	▶▶ ⇨ FF during stop
Rewind the tape	◀◀ ⇦ REW during stop
Eject the tape	⏏ EJECT

To use the time counter

At the point on the tape that you want to find later, press COUNTER RESET. The counter in the display window resets to "0:00:00." Search for the point afterwards by referring to the counter.

To display the counter on the TV screen, press DISPLAY.

Notes

- Tapes recorded in the LP mode on other VCRs can be played back on this VCR but the picture quality cannot be guaranteed.
- While setting the menu on the TV screen, you cannot use the ▷ PLAY, ❚❚ PAUSE, ▶▶ ⇨ FF, ◀◀ ⇦ REW, or ■ STOP buttons.
- The counter resets to "0:00:00" whenever a tape is reinserted.
- The counter stops counting when it comes to a portion with no recording.

continued

Turning on the VCR and TV, and starting playback automatically (Trinitron TV Synchro Play)

You can only use this function if your TV is made by Sony (Trinitron TV).

How to connect to use this function

Connect the VCR and TV with the audio/video cable (see "Audio/video (A/V) hookup" on page 6.) Be sure to connect the audio/video cable to the VIDEO IN 1 jacks on the TV if the TV has two inputs or more. The TV must be placed where it will respond to the remote commander while you are pointing it at the VCR.

Operation

Make sure that the TV's power is in standby mode.

Press TRINITRON TV SYNCHRO PLAY and hold the remote commander in place for about two seconds.

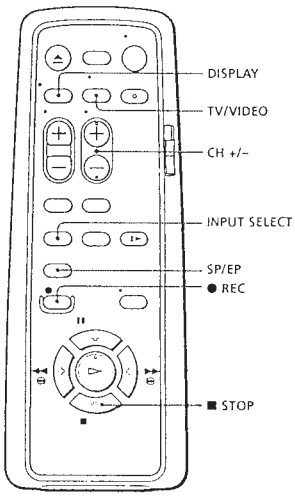
The VCR and TV turn on, and the TV is set to VCR reception. If there is a tape in the VCR, playback starts automatically.

Notes

- If the Trinitron TV Synchro Play function does not work properly:
  - Wait a few moments, and press the button again.
  - Replace both of the batteries with new ones, and press the button again.

  Note that this function may not operate some Sony TVs because of the remote commander's signal limitations.
- Do not press TRINITRON TV SYNCHRO PLAY while playing back a video tape. If you do so, the TV's input source will momentarily switch to the TV's tuner.

Recording TV programs



1 Turn on your TV and set it to the video channel.

2 Insert a tape with its safety tab in place.

3 INPUT SELECT

Press INPUT SELECT until a channel number appears in the display window.

4 +CH –

Press CH +/– to select the channel you want to record.

continued

5 SP/EP

Press SP/EP to select the tape speed, SP or EP.

EP (Extra Play) provides recording time three times as long as SP (Standard Play), however, SP produces better picture and audio quality.

6 ● REC

Press ● REC to start recording.

The recording indicator lights up red in the display window.

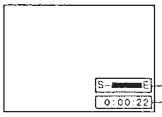
Recording indicator

To stop recording

Press ■ STOP.

To check the remaining tape length

Press DISPLAY. The white bar indicates the approximate length of tape remaining.



Remaining tape length

Time counter

To watch another TV program while recording

1. Press TV/VIDEO to turn off the VIDEO indicator in the display window.
2. If the TV is connected to the VCR's LINE OUT jacks, set the TV to TV input; if not, skip this step.
3. Select another channel on the TV.

To save a recording

To prevent accidental erasure, break off the safety tab as illustrated. To record on a tape again, cover the tab hole with adhesive tape.

Tips

- You can select a video source from the LINE-1 IN jacks using INPUT SELECT or CH +/– buttons.
- The display appears on the TV screen indicating information about the tape, but the information won't be recorded on the tape.
- If you don't want to watch TV while recording, you can turn off the TV.

Notes

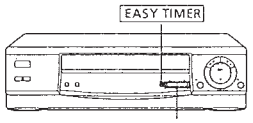
- The display doesn't appear during still (pause) mode or slow-motion playback.
- It may take up to one minute for the VCR to calculate and display the remaining tape length after you press DISPLAY.
- The VCR marks the tape with an index signal at the point where each recording begins. You can use these index search signals as references to find a specific recording with other Sony VCRs that feature the index search function.

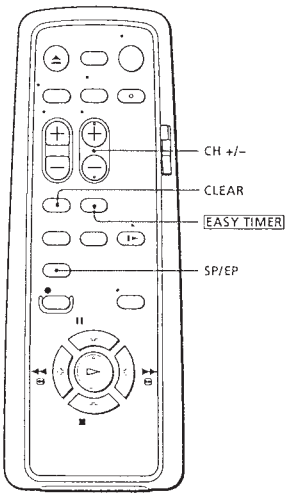
Recording TV programs using the easy timer

You can record one program on the same day (within 24 hours) using the easy timer. If the VCR clock has not been set due to power interruption, etc., you can set the clock and timer recording.

Before you start...

- Insert a tape with its safety tab in place. Make sure the tape is longer than the recording time.
- If you want to see the setting on the TV screen, turn on the TV and set it to the video channel.

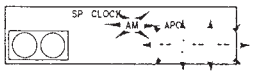




1 EASY TIMER

Press EASY TIMER.

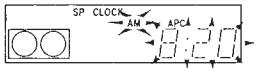
The CLOCK indicator appears and the current time flashes in the display window. If the clock has not been set yet or has been cleared, "–:– –" flashes.



2 • CH

Set the current time, if necessary, using CH +/–. If the clock has already been set correctly, skip this step.

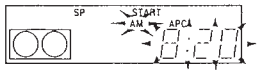
Press CH +/– to increase or decrease the time by a minute. Holding down CH +/– changes the time by 15 minutes.



3 EASY TIMER

Press EASY TIMER to confirm the clock setting.

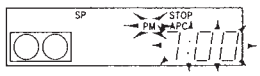
The START indicator appears.



4 • CH, EASY TIMER

Set the recording start time using CH +/– in the same way as in step 2, then press EASY TIMER.

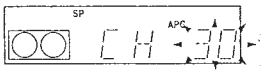
The STOP indicator appears.



5 • CH, EASY TIMER

Set the recording stop time in the same way as in step 2, then press EASY TIMER.

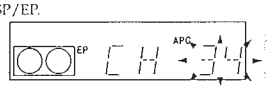
A channel number flashes.



6 • CH, SP/EP

Press CH +/– to select the channel you want to record.

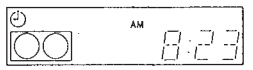
To select the tape speed, press SP/EP.



7 EASY TIMER

Press EASY TIMER to confirm the setting.

The ⏲ indicator appears in the display window and the VCR stands by for recording.



continued

Recording TV programs using the easy timer (continued)

To stop recording

To stop the VCR while recording, press ■ STOP.

To check or change the timer setting

Press EASY TIMER repeatedly until the setting you want to check or change flashes. Then re-enter the new setting, if necessary. You can also change the timer setting using the TIMER SET/CHECK menu. For details, see page 31.

To use the VCR after setting the timer

To use the VCR before a timer recording begins, just press POWER. The ⏲ indicator turns off and the VCR switches on. Remember to press POWER to reset the VCR in timer recording standby after using the VCR.

You can also do the following tasks while the VCR is recording:

- Reset the counter.
- Display tape information on the TV screen.
- Check the timer settings.
- Watch another TV program.

Tips

- To record from a source connected to LINE-1 IN jacks, press INPUT SELECT or CH +/– to display "L" in the display window.
- To cancel the easy timer setting, press CLEAR on the remote commander or press CHANNEL + and – on the VCR at the same time during the setting. Note that the cancellation can only be done after clock setting mode.

Notes

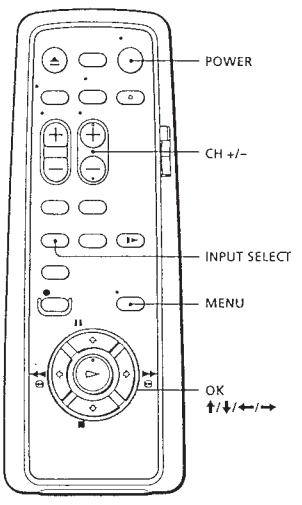
- You cannot set the easy timer if eight programs have already been set.
- You can set the timer for only one program using the easy timer. If you want to set the timer for other programs, use the TIMER SET/CHECK menu. For details, see page 27.
- You cannot set the date using the easy timer. Set the date using the CLOCK SET menu if you want to set the timer with the TIMER SET/CHECK menu. For details, see page 9.
- The ⏲ indicator flashes in the display window when you set the timer with no tape inserted.

Setting the timer manually

You can preset up to eight programs at a time.

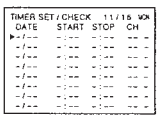
Before you start...

- Check that the VCR clock is set to the correct time.
- Turn on your TV and set it to the video channel.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.



1 • MENU

Press MENU and select TIMER SET/CHECK, then press OK.

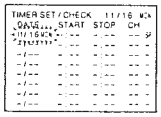


continued

Setting the timer manually (continued)

2 Set the date, start and stop times, channel number and tape speed:

1 Press → to flash each item in turn.
2 Press ↑/↓ to set each item.
To correct a setting, press ← to return to that setting and reset.



To record the same program every day or the same day every week, press ↓ while the date is flashing. For details, see "Daily/weekly recording" on this page.

To record from a source connected to the LINE-1 IN jacks, press INPUT SELECT or CH +/– to display "L" in the "CH" position.

3 Press → to confirm the setting.

The cursor (►) appears at the beginning of the line. To enter another setting, move the cursor to the next line and repeat step 2.

4 Press OK.

5 Press POWER to turn off the VCR.

The ⏲ indicator lights up in the display window and the VCR stands by for recording.

Daily/weekly recording

In step 2 above, press ↓ to select the recording pattern. Each time you press ↓, the indication changes as shown below. Press ↑ to change the indication in reverse order.

the current date → SUN-SAT → MON-SAT → MON-FRI → EVERY SAT → ..... → EVERY MON → EVERY SUN → 1 month later → (dates count down) → the current date

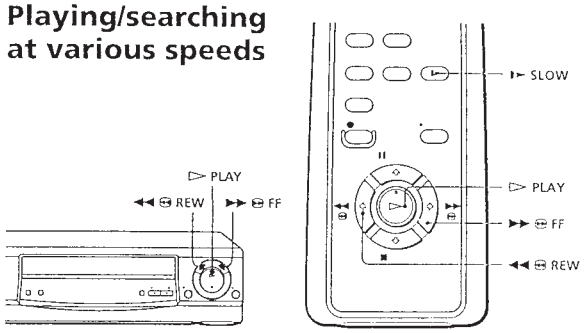
Tips

- To set the channel, you can also use CH +/–.
- To set the tape speed, you can also use SP/EP.

Notes

- The ⏲ indicator flashes in the display window when you set the timer with no tape inserted.

Playing/searching at various speeds



Playback options	Operation
View the picture during fast-forward or rewind	During fast-forward, hold ►► FF down. During rewind, hold ◄◄ REW down.
Play at high speed	• During playback, press ►► FF or ◄◄ REW on the remote commander. • During playback, hold ►► FF or ◄◄ REW down. When you release the button, normal playback resumes.
Play in slow motion	During playback or pause, press SLOW.
Play frame by frame	During pause, press ►► FF or ◄◄ REW. Hold the button down to play one frame each second.
Rewind and start play	During stop, press PLAY on the VCR while holding ◄◄ REW down on the VCR.

To resume normal playback

Press PLAY.

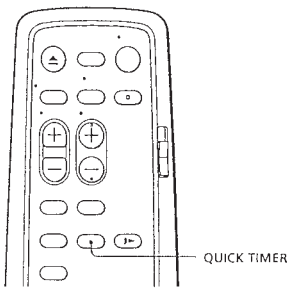
Tip

- Adjust the picture using the TRACKING +/– buttons on the VCR if:
  – The picture shakes while pausing.
  To set tracking to the center position, press both buttons (+/–) at the same time.

Notes

- The sound is muted during these operations.
- In EP mode, noise may appear or there may be no color.
- Tapes recorded in the LP mode on other VCRs can be played back on this VCR but the picture quality cannot be guaranteed.
- The picture may have snow when playing at high speed in reverse.
- On screen symbols may shake while playing or searching at various speeds.

Recording TV programs using the quick timer



After starting recording in the normal way, you can have the VCR stop recording automatically after a specified duration.

1 While recording, press QUICK TIMER once.

The ⏲ indicator appears in the display window.

2 Press QUICK TIMER repeatedly to set the duration.

Each press advances the time in increments of 30 minutes.

0:00 → 0:30 → 1:00 ----→ 10:30 → 11:00

The duration decreases minute by minute to 0:00, then the VCR stops recording and turns off automatically.

To extend the duration

Press QUICK TIMER repeatedly to set to the new duration.

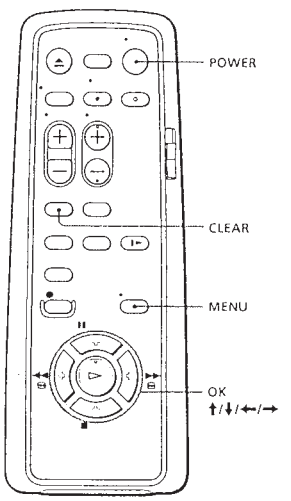
To stop the VCR while recording

Press ■ STOP.

Using the quick timer during stop mode

You can set the quick timer and start recording during stop mode by pressing QUICK TIMER. To set the channel, you can use the CH +/– or INPUT SELECT buttons. Press QUICK TIMER repeatedly to set the recording duration. The recording will start automatically.

Checking/ changing/ canceling timer settings



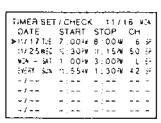
Before you start...

- Turn on your TV and set it to the video channel.

1 Press POWER to turn on the VCR.

2 Press MENU and select TIMER SET/CHECK:

- If you want to change a setting, go on to the next step.
- If you do not need to change the settings, press OK, then turn off the VCR to return to recording standby.



3 Press ↑/↓ to select the setting you want to change or cancel:

- To change the setting, press ←/→ to flash the item you want to change, and press ↑/↓ to reset it. Then, press → repeatedly until the cursor (►) appears at the beginning of the line.
- To cancel the setting, press CLEAR.

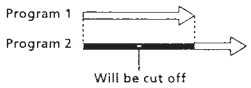
4 Press OK.

If any timer settings remain, turn off the VCR to return to recording standby.

continued

When the timer settings overlap

The program that starts first has priority and the second program starts recording only after the first program has finished. If the programs start at the same time, the program listed first in the menu has priority.

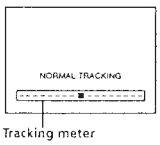


Adjusting the picture

Adjusting the tracking

Although the VCR automatically adjusts the tracking when playing a tape (the ▨ indicator flashes in the display window, then goes off), distortion may occur if the tape was recorded in poor condition. In this case, manually adjust the tracking.

Press the TRACKING +/– buttons on the VCR to display the tracking meter. The distortion should disappear as you press one of the two buttons (the ▨ indicator lights up). To resume automatic tracking adjustment, eject the tape and reinsert it.



Tracking meter

About Adaptive Picture Control (APC)

Adaptive Picture Control (APC) automatically improves recording and playback quality by adjusting the VCR to the condition of the video heads and tape. To maintain better picture quality, we recommend that you set APC to ON in the SET UP MENU (with the APC indicator in the display window lit).

APC playback

The APC function automatically works on all types of tapes, including rental tapes and tapes that were not recorded with APC.

APC recording

Whenever you insert a tape and start recording at the first time, the VCR adjusts to the tape using the APC function (the APC indicator flashes rapidly). This adjustment is retained until the tape is ejected.

To deactivate the APC

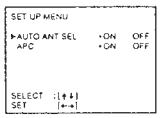
Press MENU and select SET UP MENU, then set APC to OFF. The APC indicator in the display window goes off.

Notes

- The auto tracking adjustment cannot be guaranteed to work with tapes recorded in the LP mode on other VCRs.
- There is a delay of a few seconds before the VCR actually starts recording while the VCR analyzes the tape. To avoid the delay, first set the VCR to recording pause (the APC indicator flashes slowly) and press ● REC to have the VCR analyze the tape. After the APC indicator stops flashing, press ❚❚ PAUSE to start recording immediately. If you press ❚❚ PAUSE before the APC indicator stops flashing, the APC function is canceled.

Changing menu options

1 Press MENU and select SET UP MENU.



2 Press ↑/↓ to select the option to change, then press ←/→ to change the setting.

3 Press OK to return to the original screen.

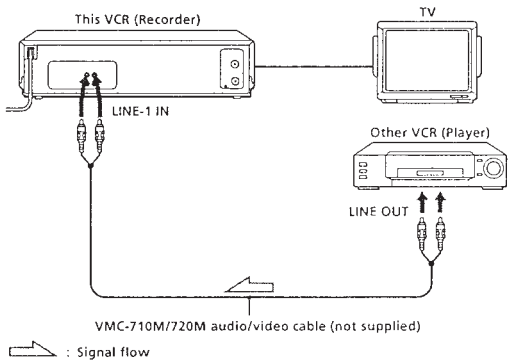
Menu choices

Initial settings are indicated in bold print.

Menu option	Set this option to
AUTO ANT SEL	**ON** if your TV is connected only to VHF/UHF OUT on the VCR. To play a tape, set the TV to the VCR channel (channel 3 or 4). OFF if your TV is connected to both VHF/UHF OUT and LINE OUT on the VCR. To play a tape, set the TV to the VCR input.
APC	**ON** to switch on the APC (Adaptive Picture Control) function and improve picture quality. OFF to switch off APC.

Editing with another VCR

How to hook up to record on this VCR



Notes

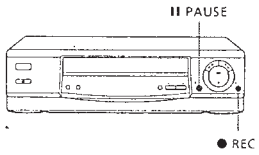
- Make sure you connect the plugs to jacks of the same color.
- If you connected this VCR to both the LINE IN and LINE OUT jacks of the other VCR, select the input correctly to prevent a humming noise.

continued

Operation (when recording on this VCR)

Before you start editing

- Turn on your TV and set it to the video channel.
- Press INPUT SELECT or CH +/– to display "L" in the display window.
- Press SP/EP to select the tape speed, SP or EP.



1. Insert a source tape with its safety tab removed into the other (playback) VCR. Search for the point to start playback and set it to playback pause.
2. Insert a tape with its safety tab in place into this (recording) VCR. Search for the point to start recording and press II PAUSE.
3. Press ● REC and set it to recording pause.
4. To start editing, press the II PAUSE buttons on both VCRs at the same time.

To stop editing

Press the ■ STOP buttons on both VCRs.

Tips

- To edit more precisely, press the II PAUSE buttons on the VCRs to release pause.
- To cut out unwanted scenes while editing, press II PAUSE on this VCR when an unwanted scene begins. When it ends, press II PAUSE again to resume recording.

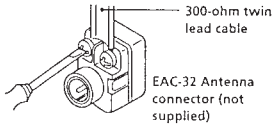
Note

- If you start recording following the procedure above, the VCR won't start recording with the APC function. To record a tape with the APC function, press ● REC again during recording pause in step 3 so that the VCR analyzes the tape. Then when you start recording in step 4, press II PAUSE immediately after the APC indicator stops flashing. If you press II PAUSE before the APC indicator stops flashing, the APC function is canceled.

General setup information

Attaching the external antenna connector

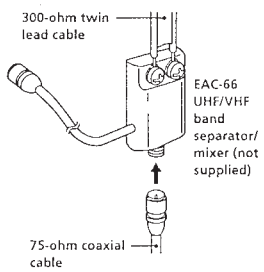
When using a 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-32 antenna connector (not supplied) to connect the antenna to the VCR.



1. Loosen the screws on the antenna connector.
2. Wind the twin leads around the screws on the antenna connector.
3. Retighten the screws.

Attaching a UHF/VHF band mixer

When using both 75-ohm coaxial cable and 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-66 UHF/VHF band separator/mixer (not supplied) to connect the antenna to the VCR.

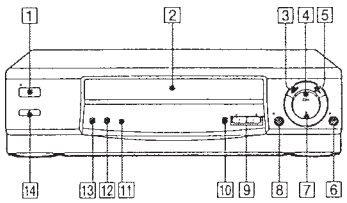


1. Loosen the screws on the mixer.
2. Wind the twin leads around the screws on the mixer.
3. Retighten the screws.
4. Connect the 75-ohm coaxial cable to the mixer.

Index to parts and controls

Refer to the pages indicated in parentheses ( ) for details.

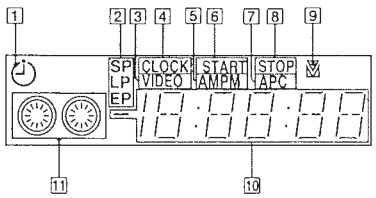
Front panel



1. POWER switch/indicator (28)
2. Tape compartment
3. ◀◀ REW (rewind) button (19, 29)
4. ▷ PLAY button (19)
5. ▶▶ FF (fast-forward) button (19, 29)
6. ● REC (record) button (22)
7. ■ STOP button (19)
8. II PAUSE button (19)
9. CHANNEL/TRACKING +/– buttons (21, 33)
10. EASY TIMER button (24)
11. Remote sensor (5)
12. INPUT SELECT button (21, 28)
13. ONE TOUCH TUNING button (11)
14. ⏏ EJECT button (19)

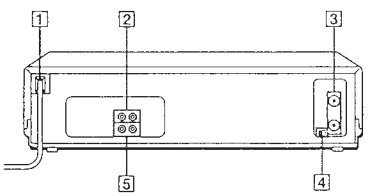
continued

Display window



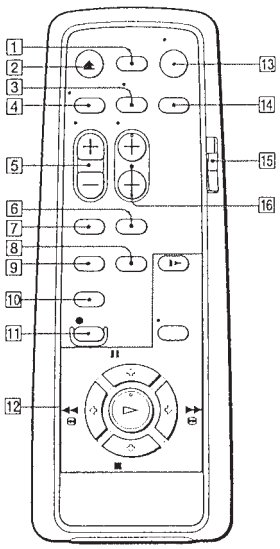
1. Timer indicator (25)
2. Tape speed indicator (22)
3. VIDEO indicator (8, 22)
4. CLOCK indicator (24)
5. AM/PM indicator
6. START indicator (25)
7. APC (Adaptive Picture Control) indicator (33)
8. STOP indicator (25)
9. Tracking indicator (33)
10. Time counter/clock/line/channel indicator (19, 21, 25, 36)
11. Tape/recording indicator (22)

Rear panel



1. AC power cord
2. LINE-1 IN AUDIO/VIDEO jacks (35)
3. VHF/UHF IN/OUT connectors (7)
4. RF (Radio Frequency) UNIT switch (8)
5. LINE OUT AUDIO/VIDEO jacks (6)

Remote commander



1 TRINITRON TV SYNCHRO PLAY button (20)

2 ⏏ EJECT button (19)

3 TV/VIDEO button (8)

4 Display button (22)

5 VOL (volume) +/– buttons *(for TV)*

6 EASY TIMER button (24)

7 CLEAR button (31)

8 QUICK TIMER button (30)

9 INPUT SELECT button (21, 28)

10 SP (Standard Play)/EP (Extra Play) button (22)

11 ● REC (record) button (22)

12 Tape/menu operation buttons

MENU button (9, 34)
❚❚ PAUSE/↑ button (19)
■ STOP/↓ button (19)
◄◄ ⊖ REW (rewind)/← button (19, 29)
►► ⊕ FF (fast-forward)/→ button (19, 29)
▷ PLAY/OK button (18)
❚► SLOW button (29)

13 POWER switch (28)

14 COUNTER RESET button (19)

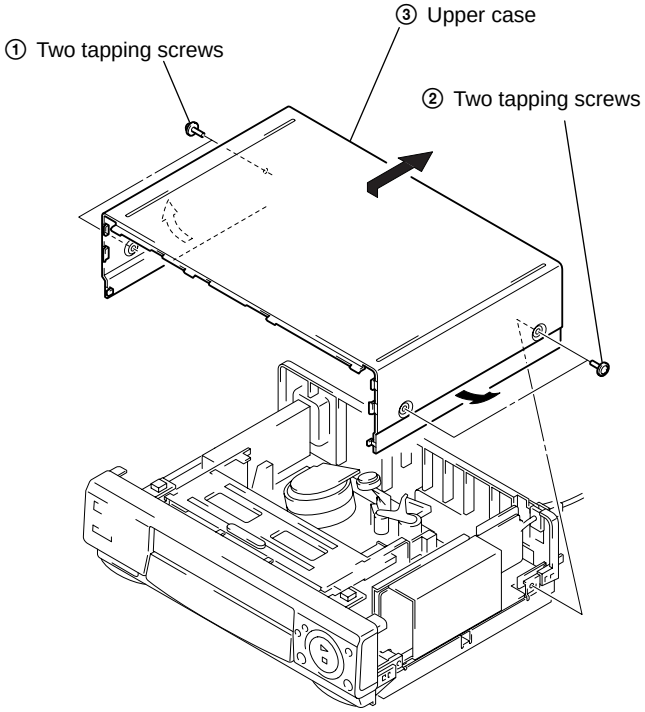
15 TV/VIDEO remote control switch (5)

16 CH (channel) +/– buttons (21)

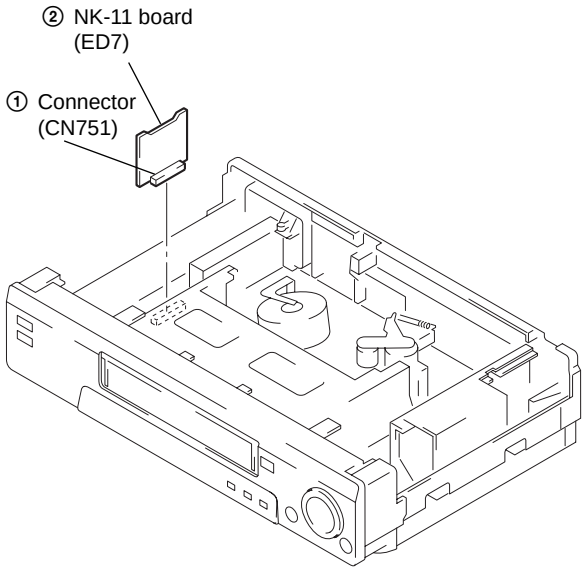
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

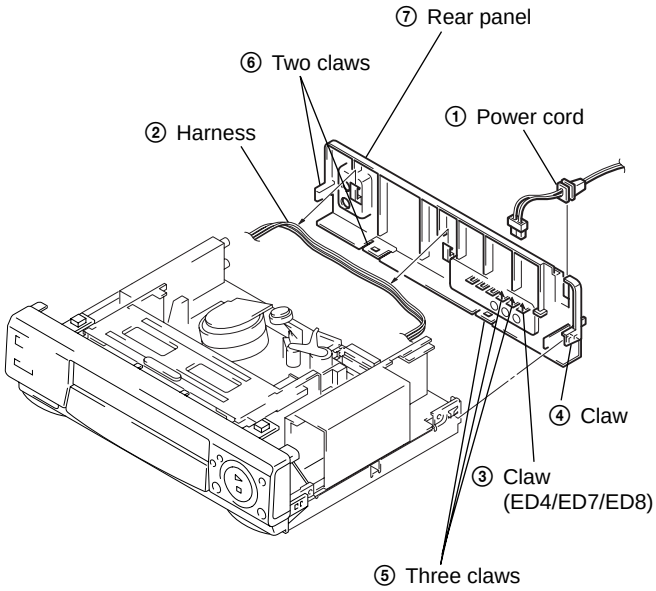
2-1. UPPER CASE REMOVAL



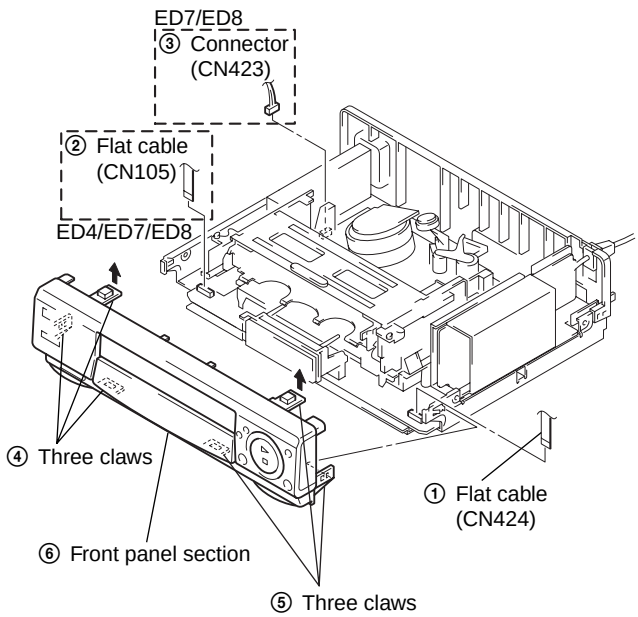
2-2. NK-11 BOARD REMOVAL



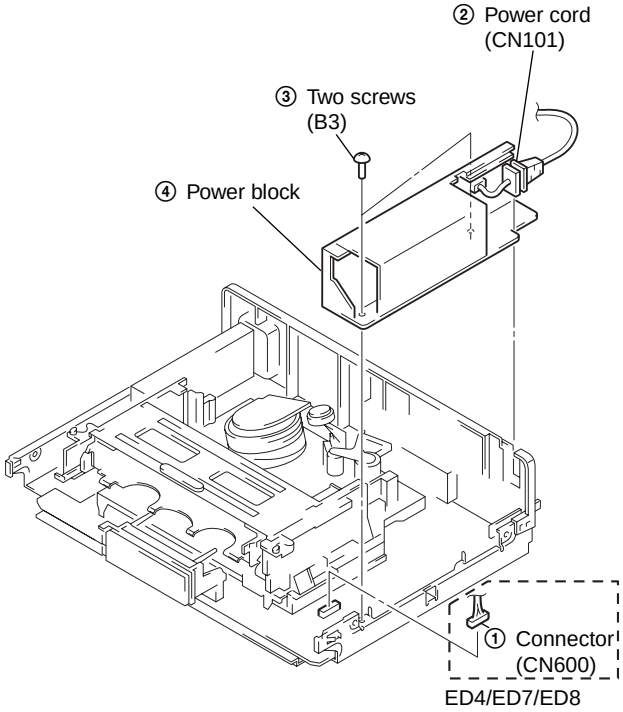
2-3. REAR PANEL REMOVAL



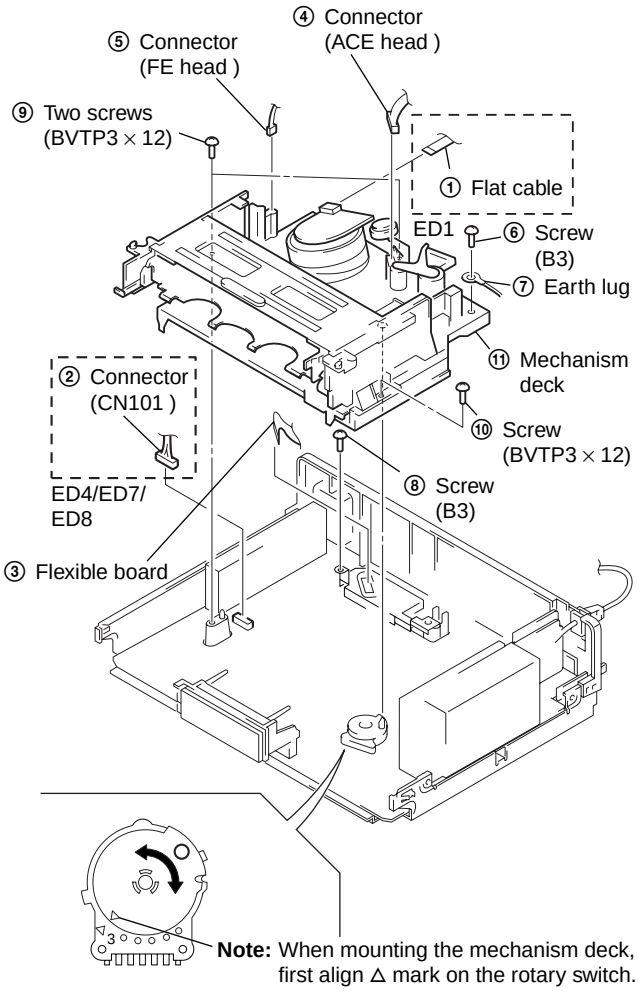
2-4. FRONT PANEL SECTION REMOVAL



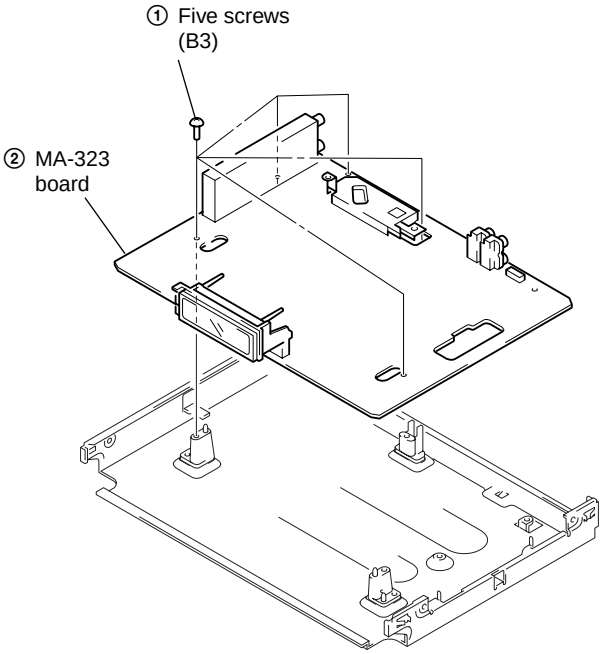
2-5. POWER BLOCK REMOVAL



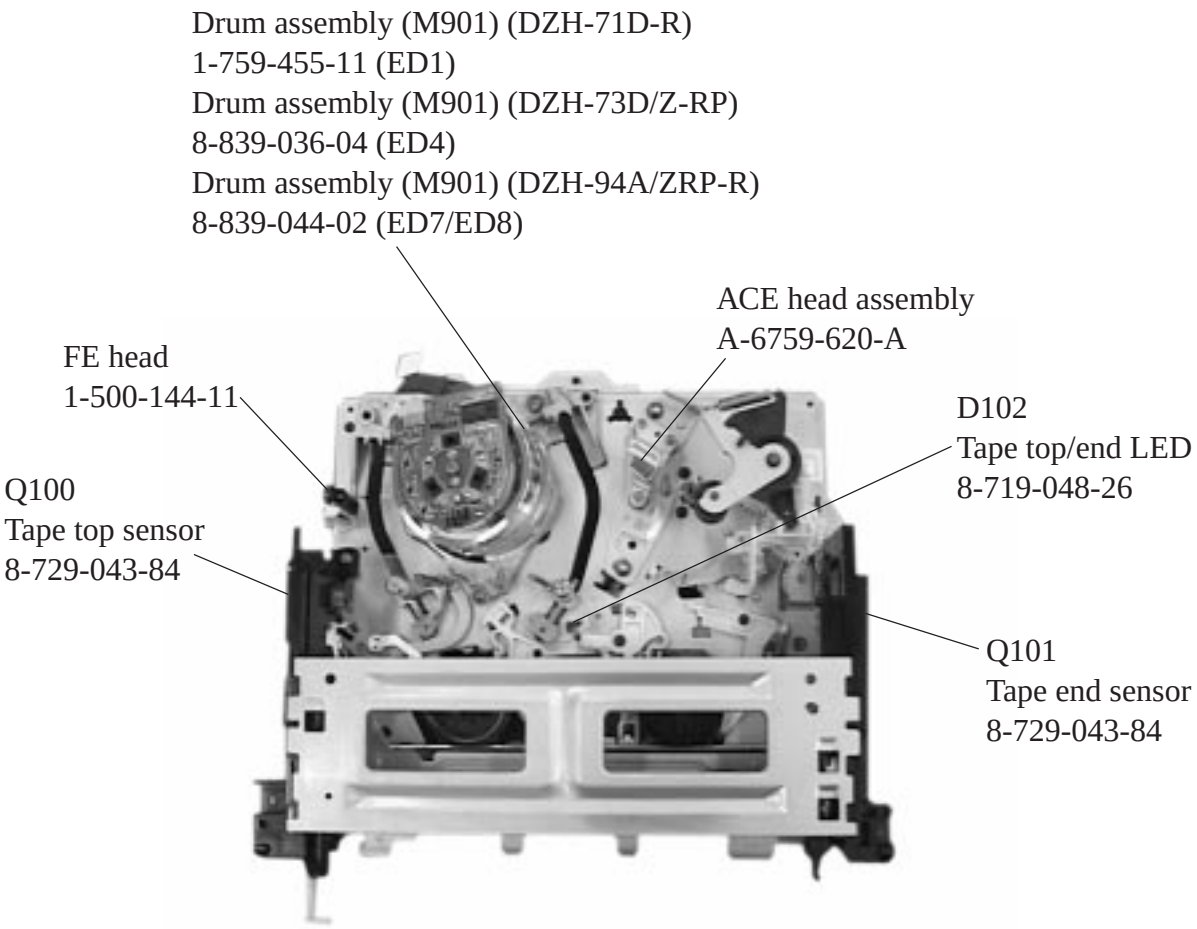
2-6. MECHANISM DECK REMOVAL

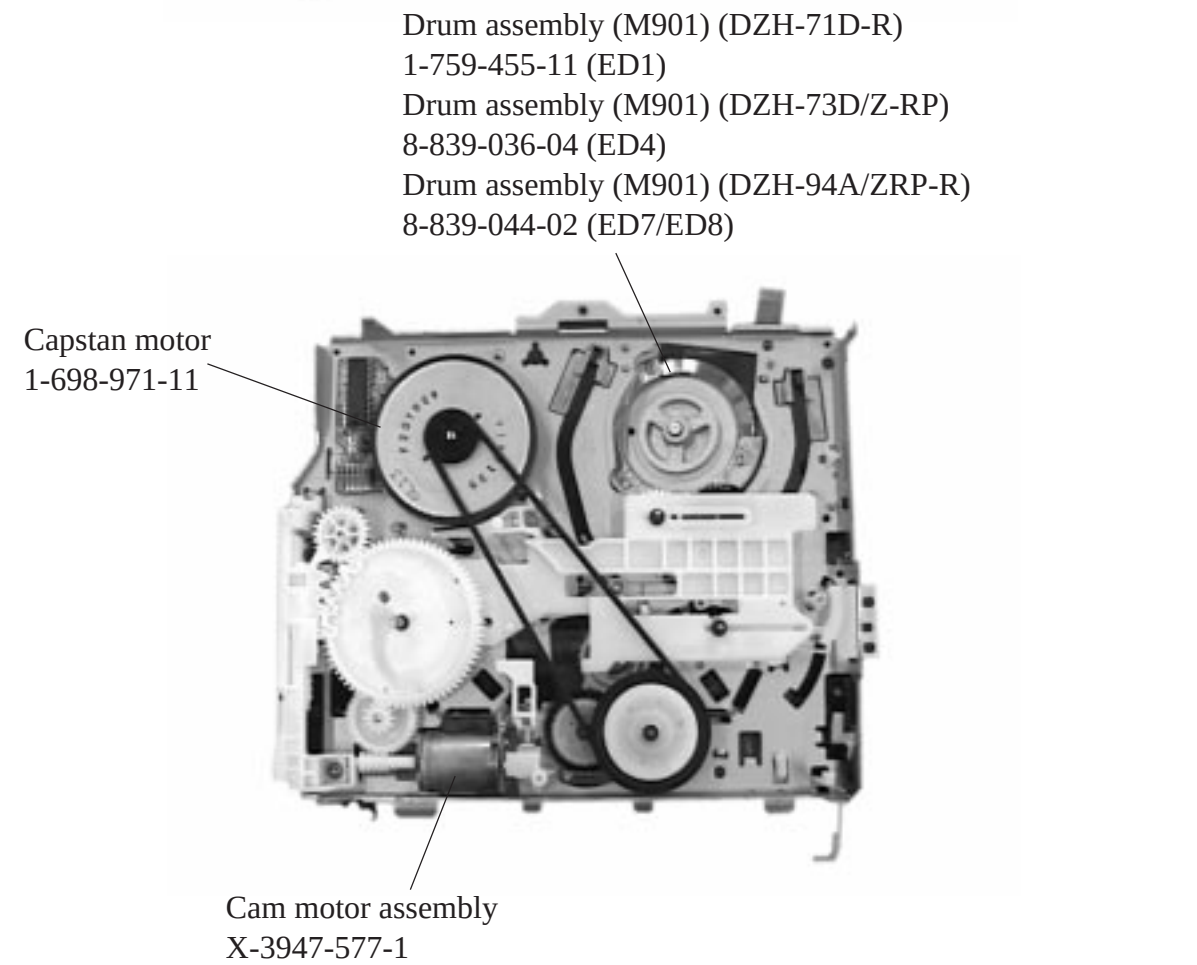


2-7. MA-323 BOARD REMOVAL



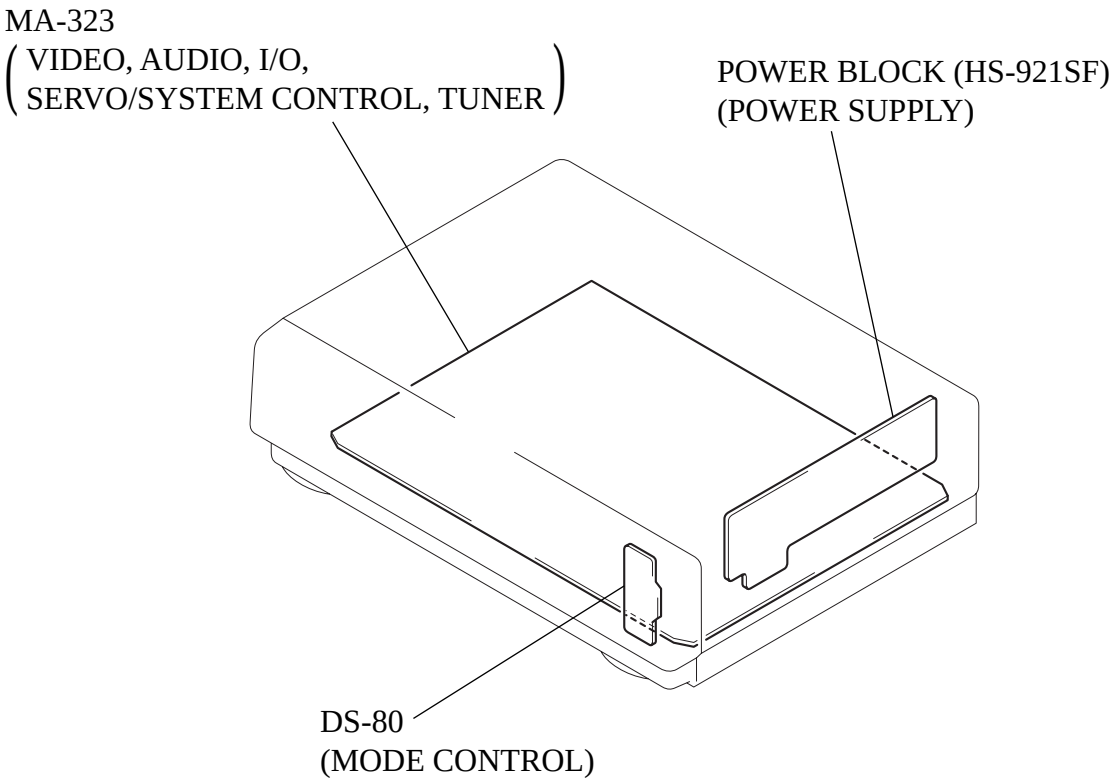
2-8. INTERNAL VIEWS



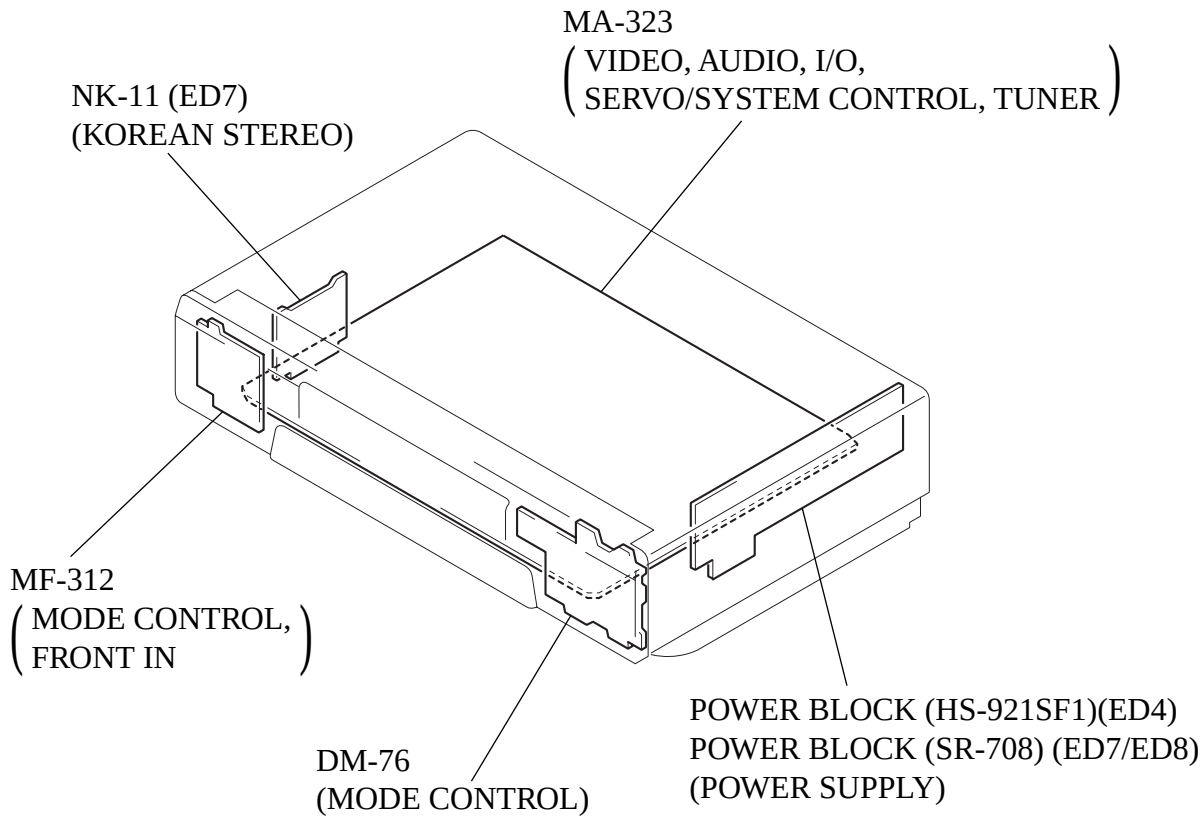


2-9. CIRCUIT BOARDS LOCATION

ED1

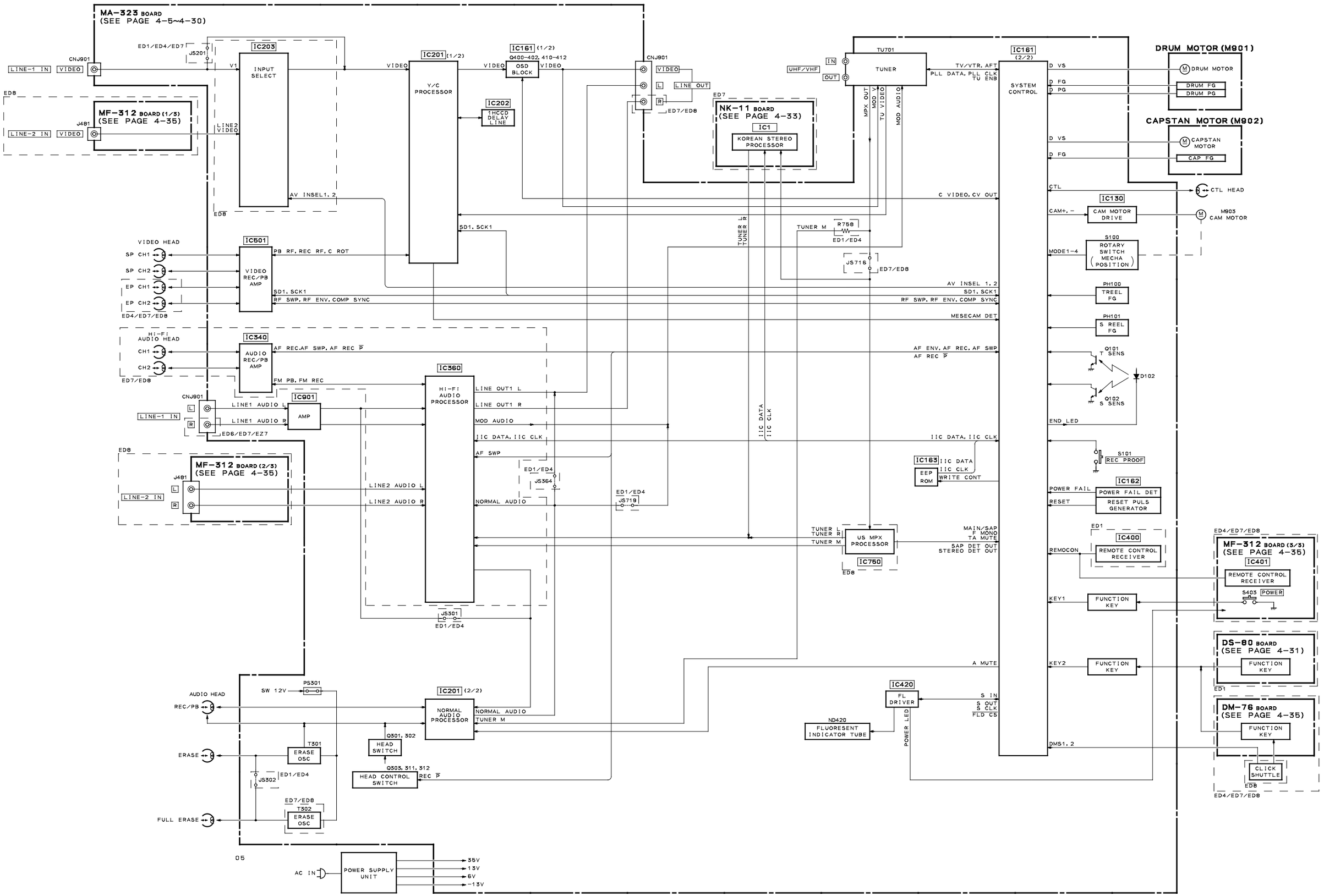


ED4/ED7/ED8

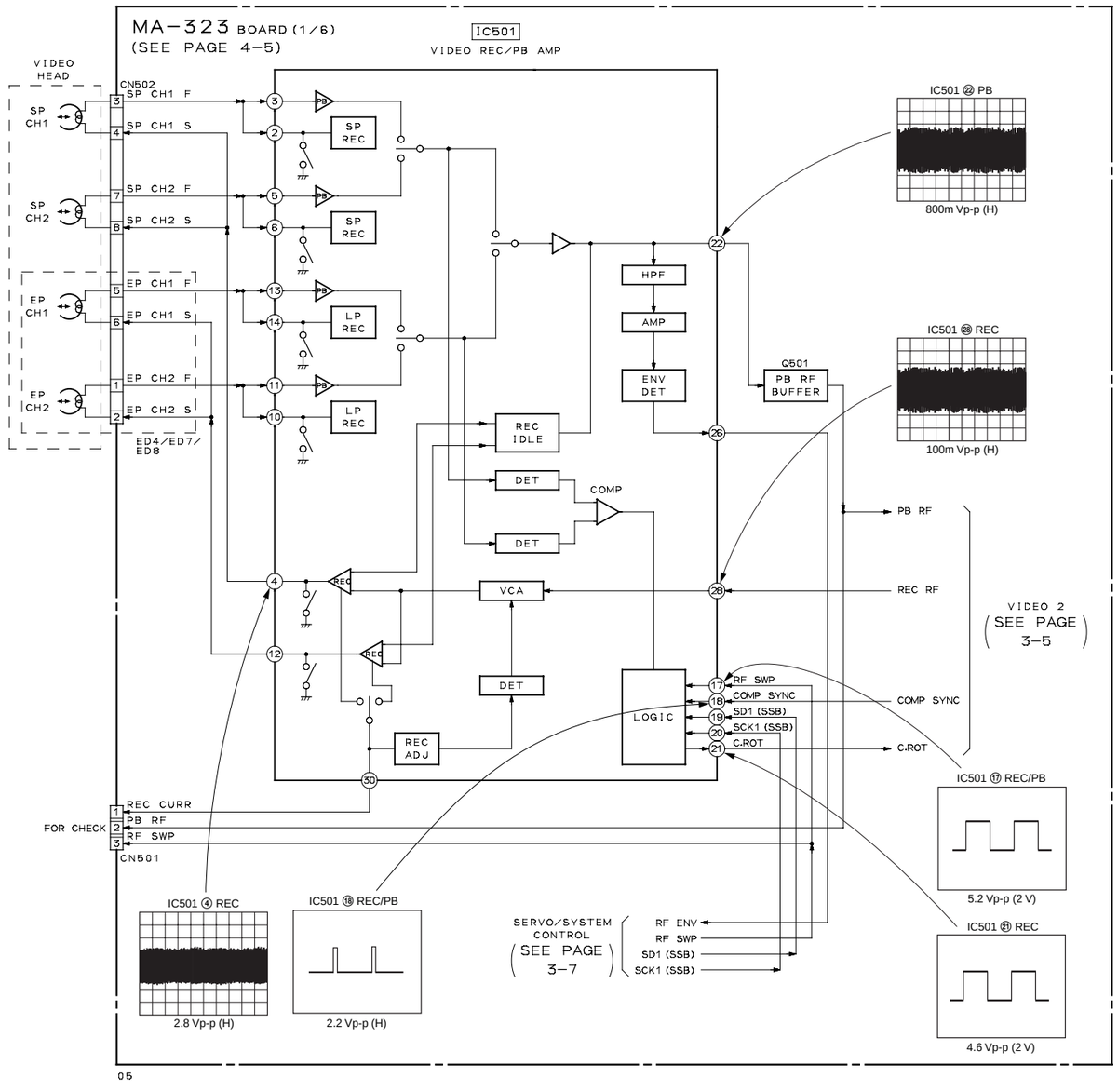


SECTION 3
BLOCK DIAGRAM

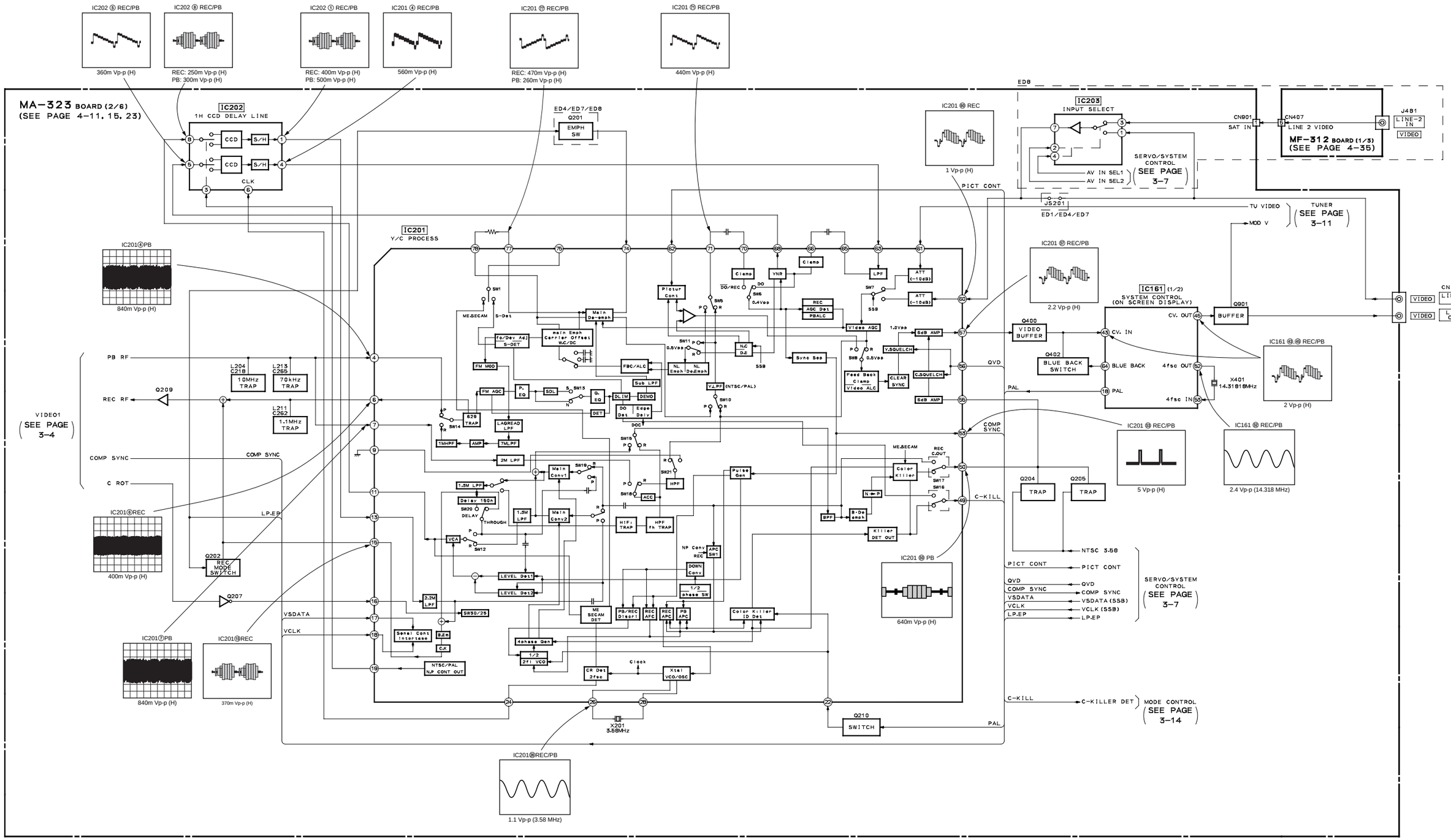
3-1. OVERALL BLOCK DIAGRAM



3-2. VIDEO1 BLOCK DIAGRAM

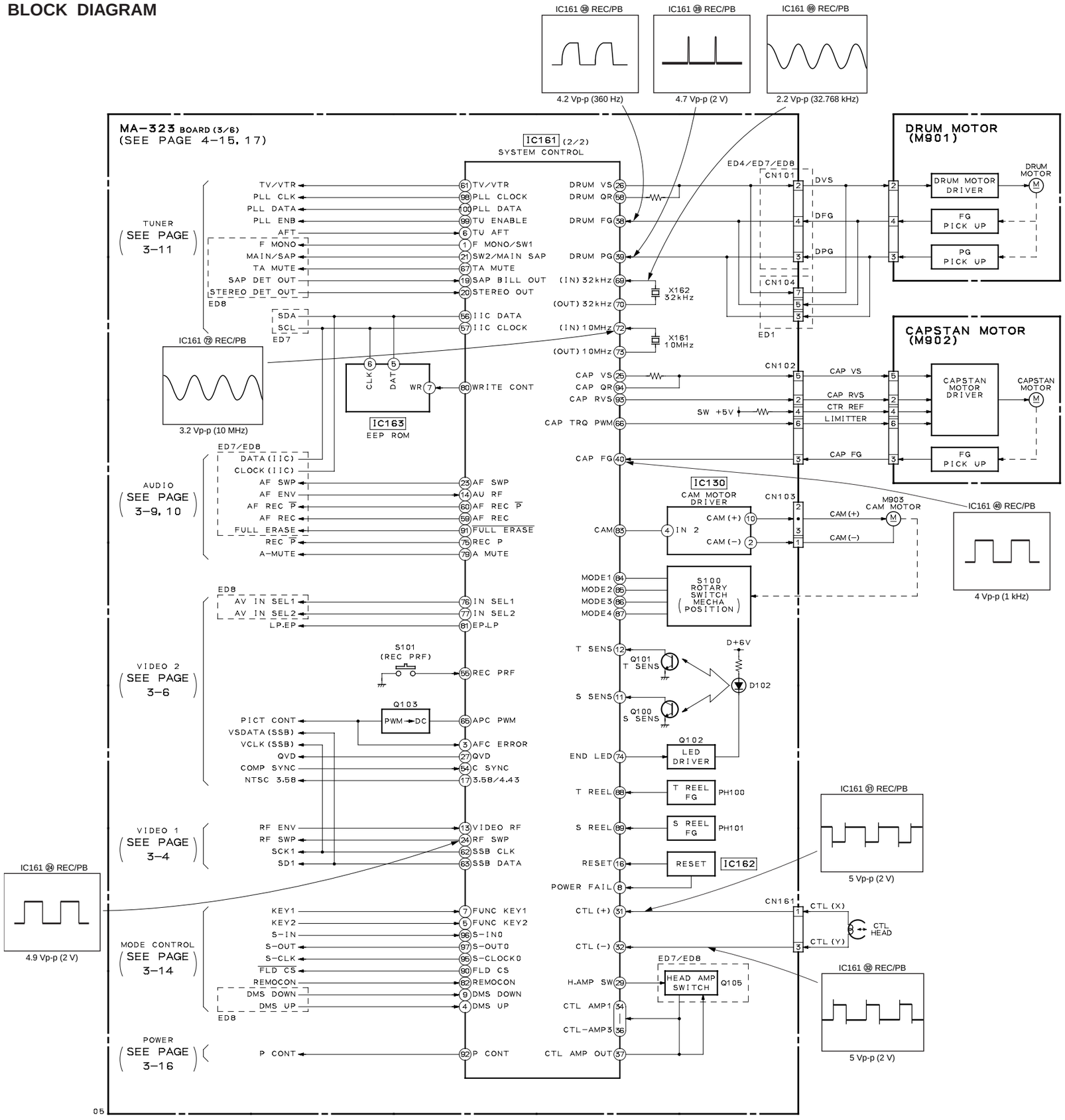


3-3. VIDEO2 BLOCK DIAGRAM

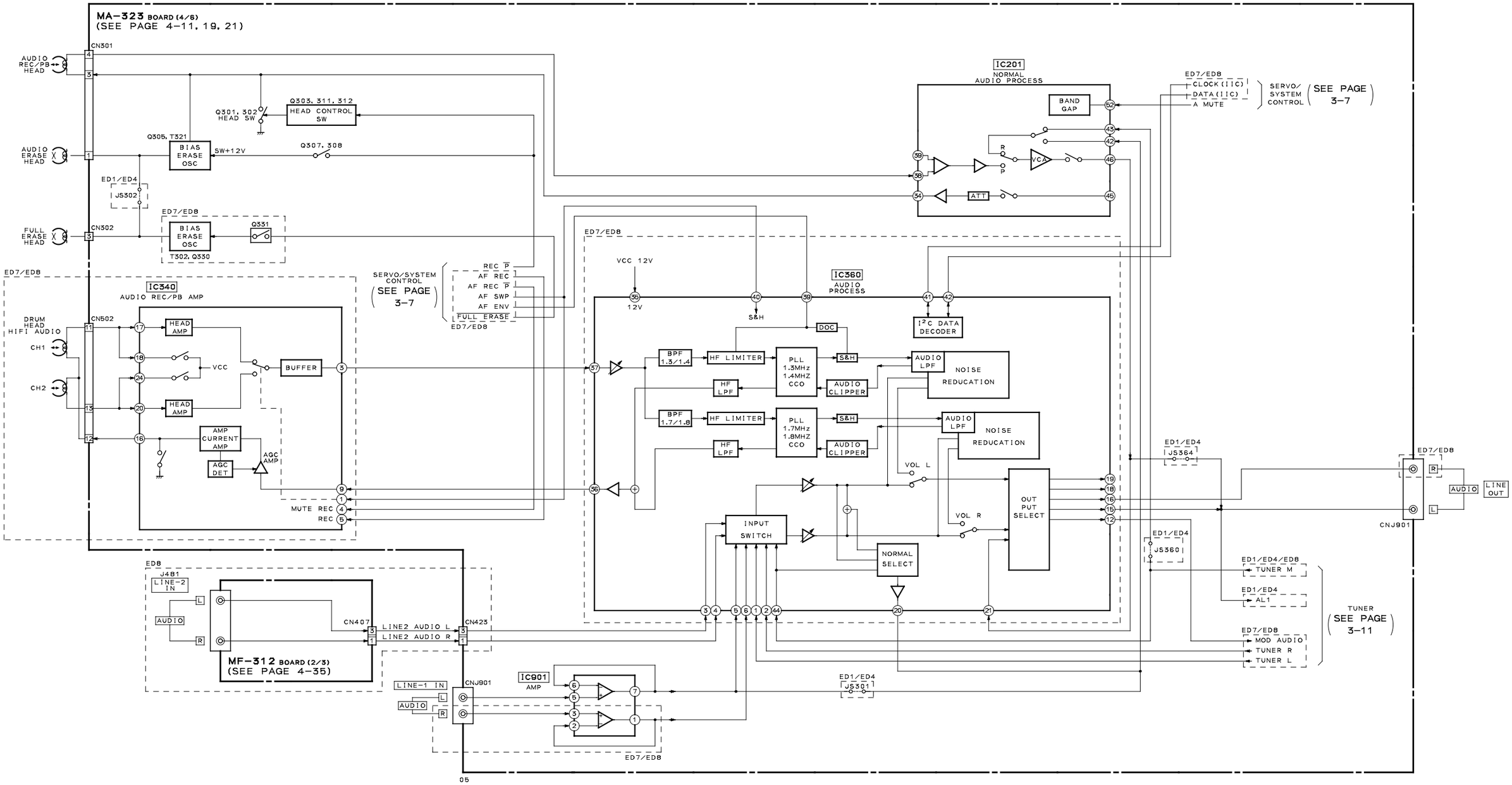


05

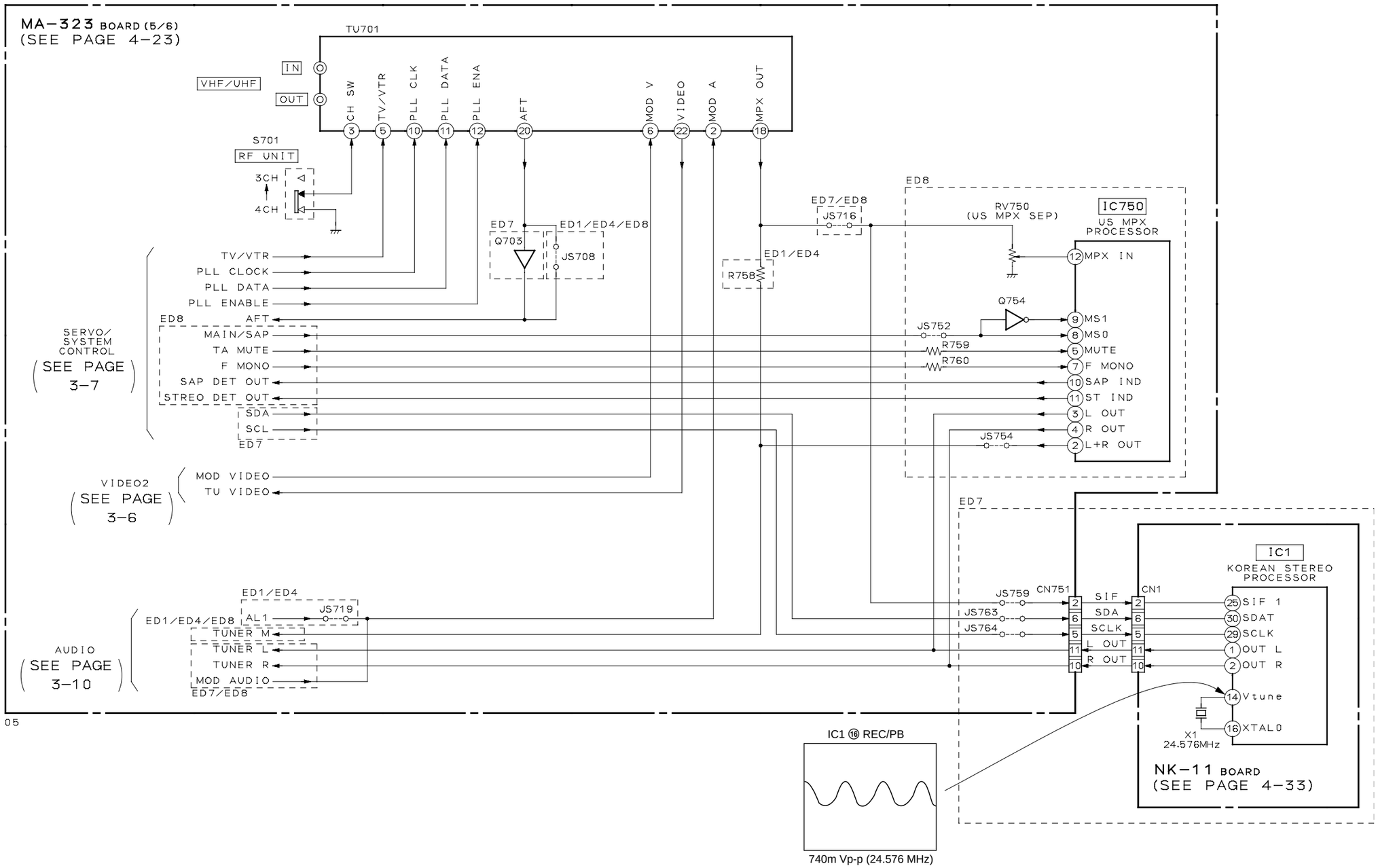
3-4. SERVO/SYSTEM CONTROL BLOCK DIAGRAM



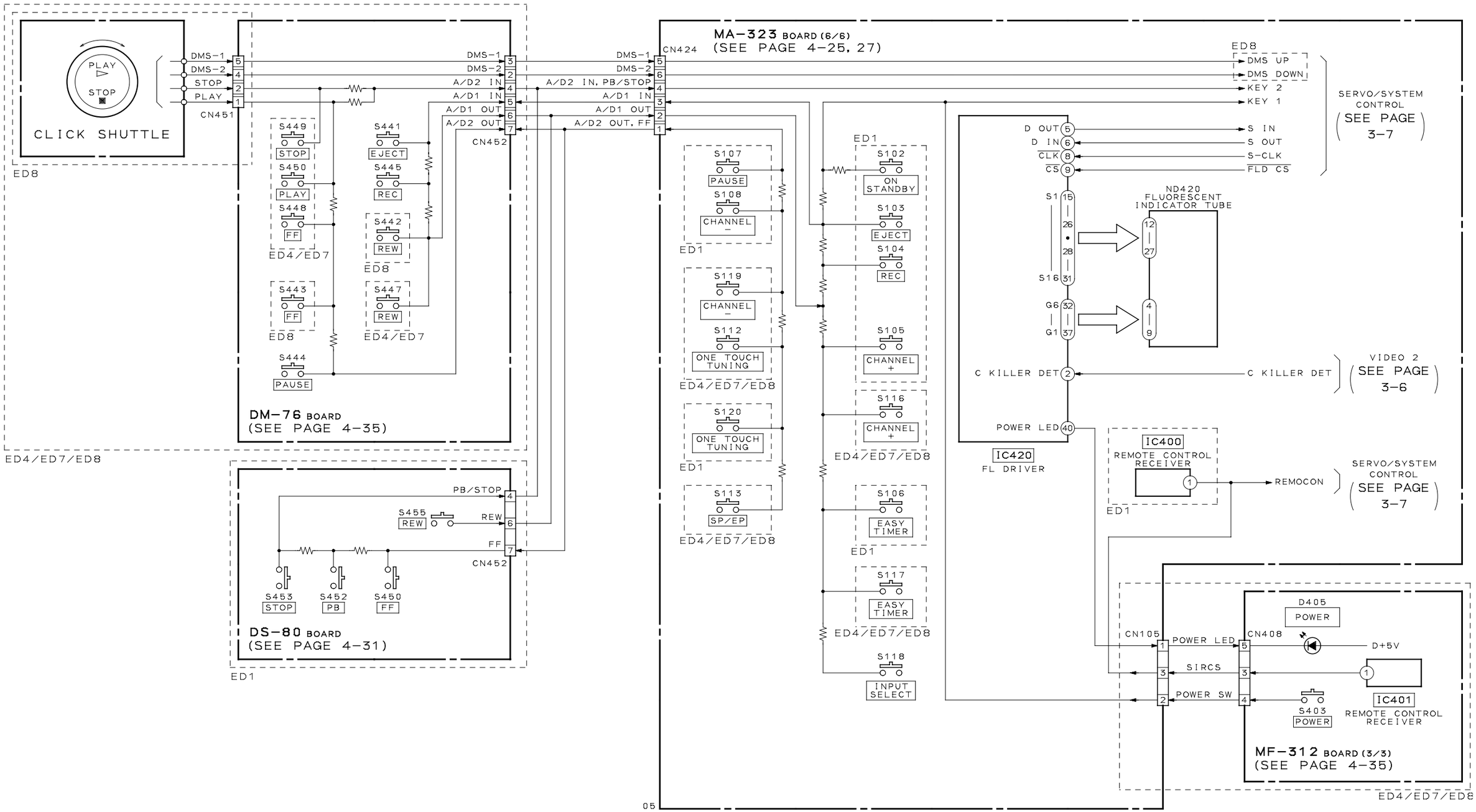
3-5. AUDIO BLOCK DIAGRAM



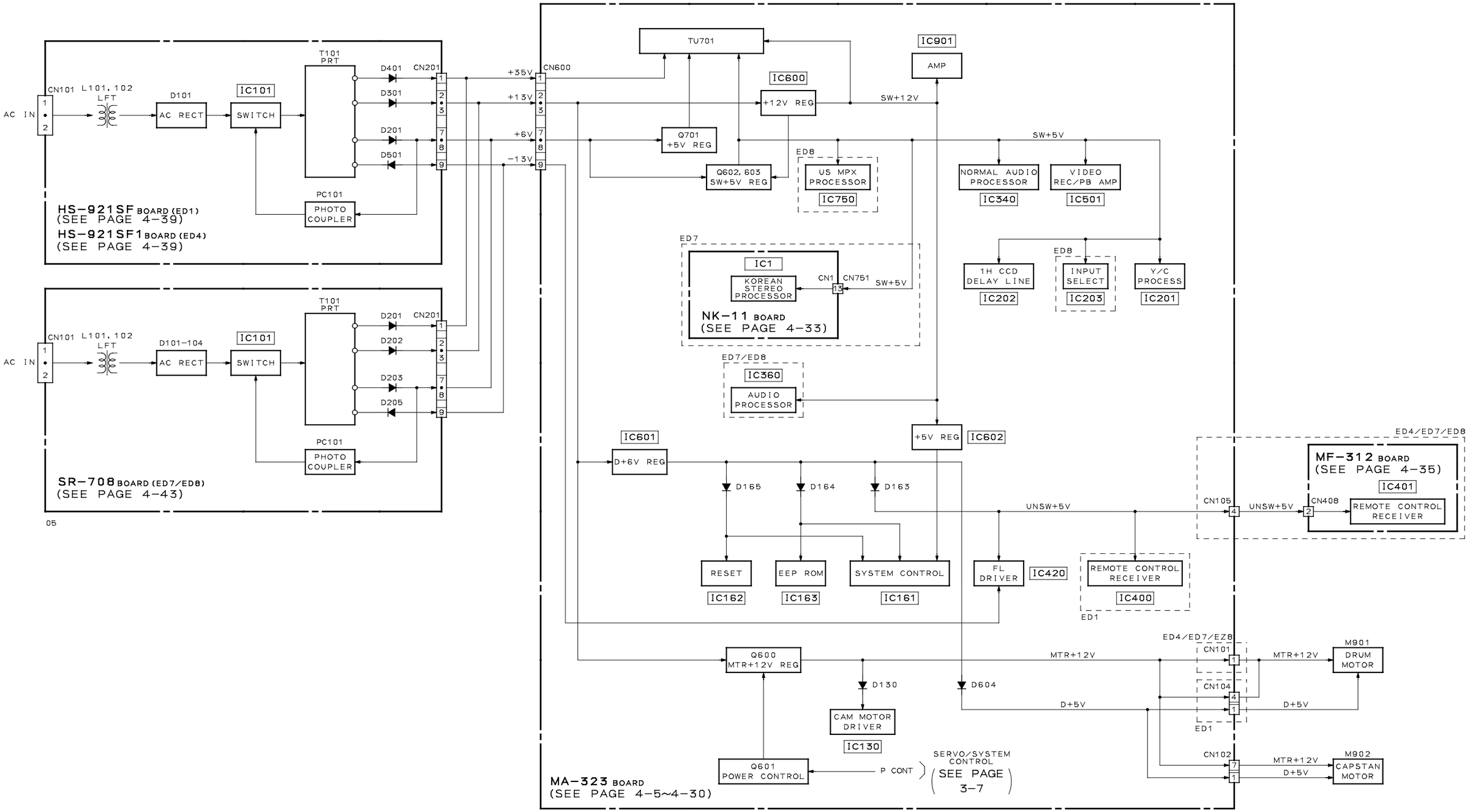
3-6. TUNER BLOCK DIAGRAM



3-7. MODE CONTROL BLOCK DIAGRAM



3-8. POWER BLOCK DIAGRAM



SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary mote is printed in each block.)

For printed wiring boards:

- ○——— : indicates a lead wire mounted on the component side.
- ●——— : indicates a lead wire mounted on the printed side.
- ○ : Through hole.
- ■ : Parts mounted on the conductor side.
- ▒▒▒ : Pattern from the side which enables seeing.

Caution:	
Pattern face side: (Side B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A)	Parts on the parts face side seen from the parts face are indicated.

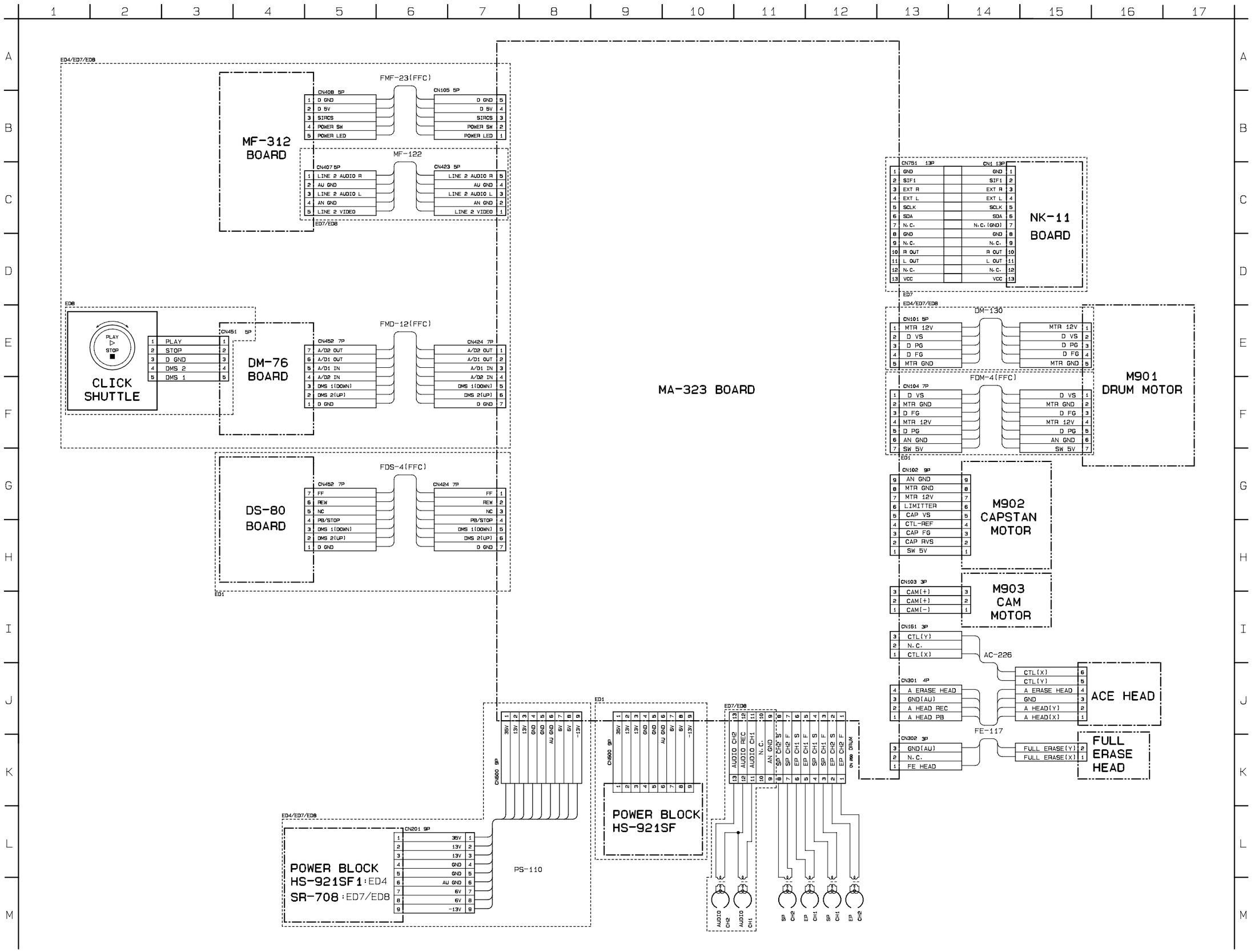
For schematic Diagram:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, $^1/_4$ W (Chip resistors : $^1/_{10}$ W) unless otherwise specified.
  kΩ : 1000Ω, MW : 1000kΩ.
- All capacitors are in µF unless otherwise noted. pF : µµF 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- △ : internal component.
- : adjustment for repair.
- B + : B+ Line.
- B − : B– Line.
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC 10MW).
- Voltage variations may be noted due to normal production tolerances.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

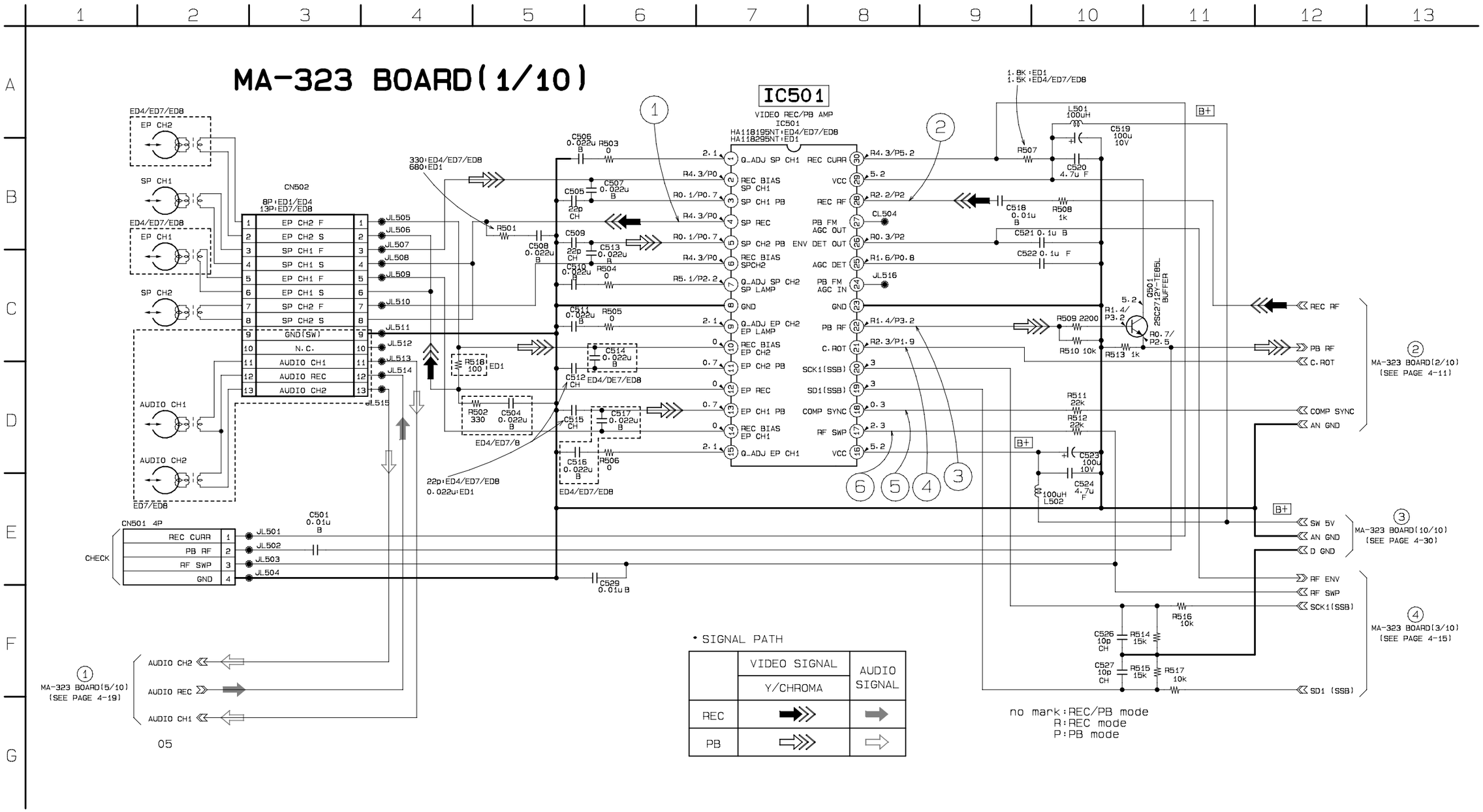
4-1. FRAME SCHEMATIC DIAGRAM



4-2. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAMS

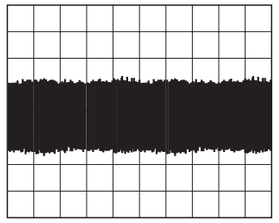
MA-323 (HEAD AMP) SCHEMATIC DIAGRAM **• See page 4-9 to 4-10 for printed wiring board.**

– Ref. No.: MA-323 board; 2,000 series –



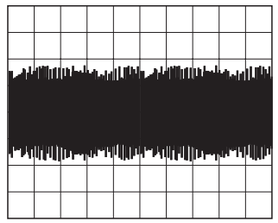
• Waveforms

❶ IC501 ④ REC



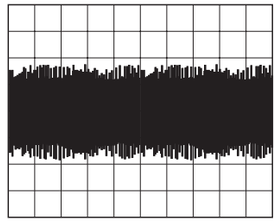
2.8 Vp-p (H)

❷ IC501 ㉘ REC



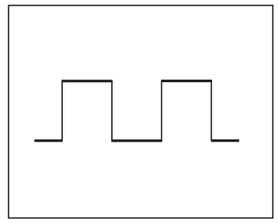
100m Vp-p (H)

❸ IC501 ㉒ PB



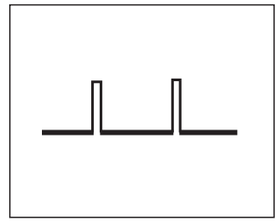
800m Vp-p (H)

❹ IC501 ㉑ REC/PB



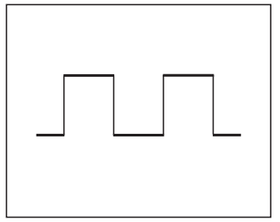
4.6 Vp-p (2 V)

❺ IC501 ⑱ REC/PB

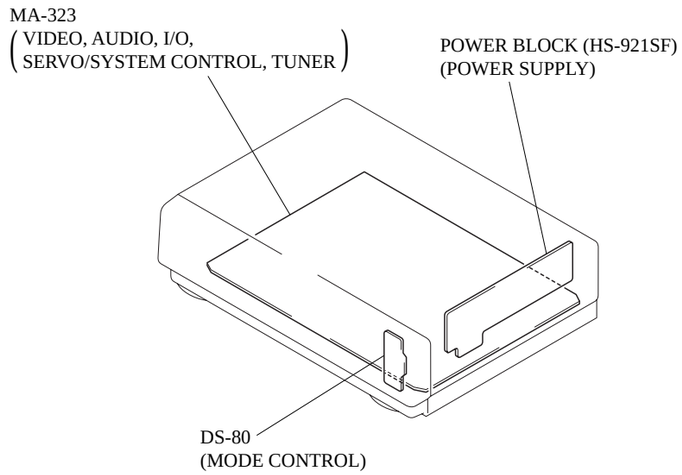


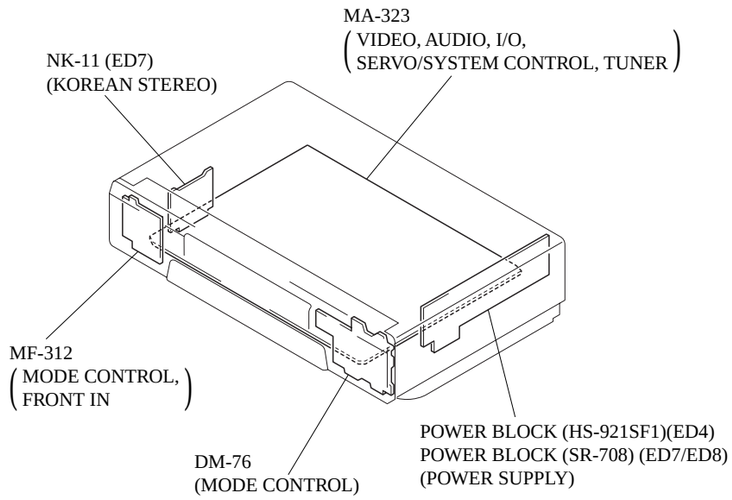
2.2 Vp-p (H)

❻ IC501 ⑰ REC/PB



5.2 Vp-p (2 V)





MA-323 BOARD

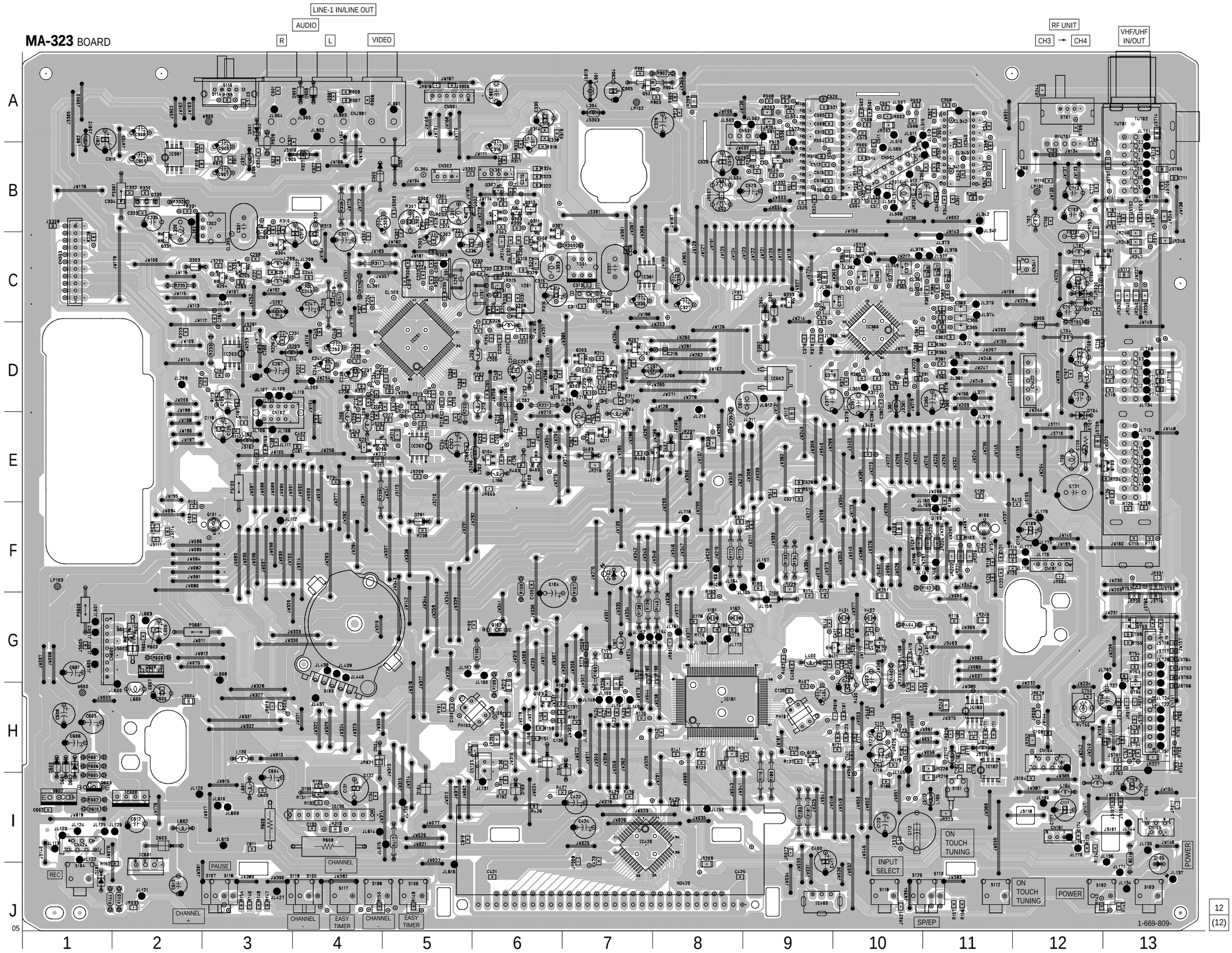
CN101	F-12	Q100	F-11
CN102	E-3	Q101	F-3
CN103	H-6	Q102	G-6
CN104	H-12	Q103	H-6
CN105	I-13	Q105	H-9
CN161	I-12	Q201	E-4
CN301	B-6	Q202	D-7
CN302	B-5	Q204	C-3
CN341	C-12	Q205	C-3
CN423	D-12	Q207	D-7
CN424	I-1	Q208	C-6
CN501	A-9	Q209	D-7
CN502	B-10	Q210	D-6
CN600	G-1	Q301	B-6
CN751	H-13	Q302	B-6
		Q303	B-6
D102	F-7	Q305	C-7
D103	F-11	Q307	C-6
D104	I-5	Q308	C-6
D105	J-13	Q311	B-6
D106	G-9	Q312	B-6
D130	I-4	Q330	B-2
D163	I-6	Q331	C-2
D164	I-7	Q332	B-6
D165	H-6	Q400	E-6
D305	B-5	Q402	E-8
D306	D-12	Q501	B-9
D307	B-5	Q600	G-2
D401	J-1	Q601	G-2
D402	E-8	Q602	I-1
D403	E-7	Q603	I-1
D600	H-1	Q701	C-13
D601	H-1	Q703	E-13
D602	H-1	Q754	H-13
D603	I-2	Q901	A-7
D604	H-5		
D701	C-12		
D702	C-12		
D704	E-12		
D908	A-4		
D909	A-4		

IC130	I-4
IC161	H-8
IC162	I-11
IC163	H-11
IC201	D-5
IC202	E-5
IC203	D-3
IC340	B-11
IC360	D-10
IC400	J-9
IC420	I-7
IC501	B-9
IC600	I-2
IC601	J-2
IC602	D-9
IC750	H-13
IC901	B-2

MA-323 (HEAD AMP, VIDEO, AUDIO, IO, SERVO/SYSTEM CONTROL, TUNER) PRINTED WIRING BOARD

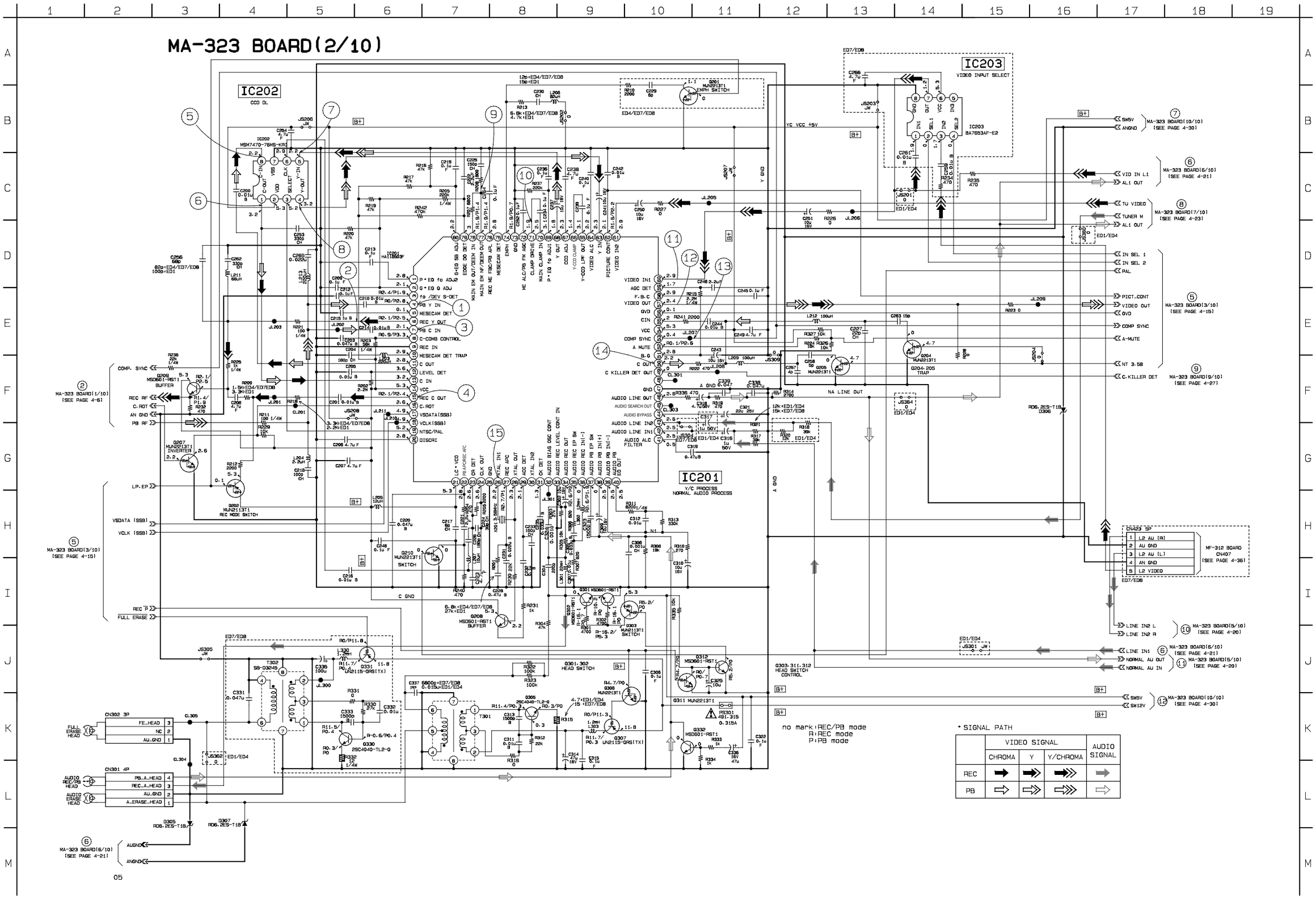
– Ref. No.: MA-323 board; 2,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.



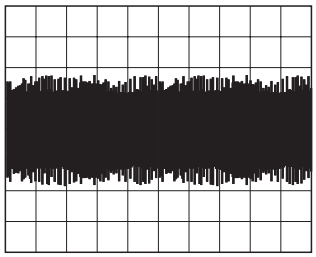
MA-323 (VIDEO, AUDIO) SCHEMATIC DIAGRAM • See page 4-9 to 4-10 for printed wiring board.

– Ref. No.: MA-323 board; 2,000 series –



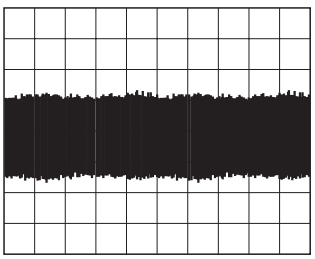
• Waveforms

❶ IC201 ④ PB



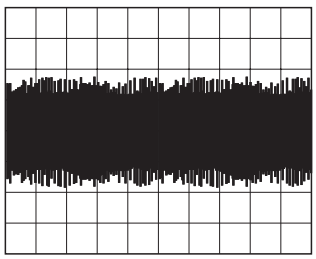
840m Vp-p (H)

❷ IC201 ⑥ REC



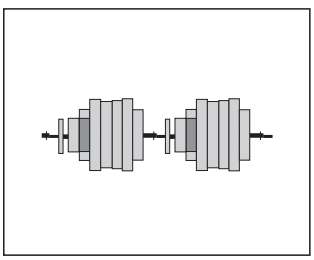
400m Vp-p (H)

❸ IC201 ⑦ PB



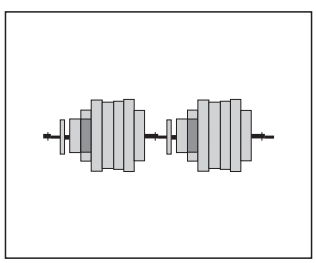
840m Vp-p (H)

❹ IC201 ⑮ REC



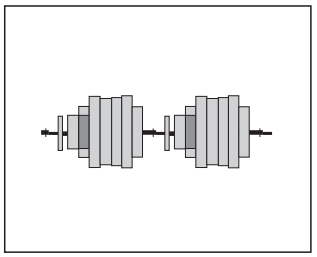
370m Vp-p (H)

❺ IC202 ⑧ REC/PB



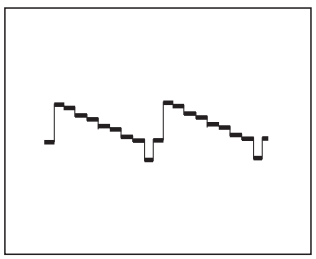
REC: 250m Vp-p (H)
PB : 300m Vp-p (H)

❻ IC202 ① REC/PB



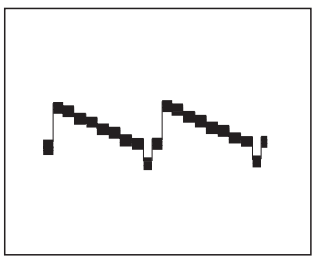
REC: 400m Vp-p (H)
PB : 500m Vp-p (H)

❼ IC202 ⑤ REC/PB



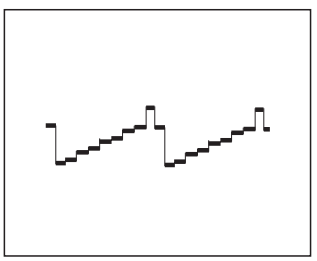
360m Vp-p (H)

❽ IC202 ④ REC/PB



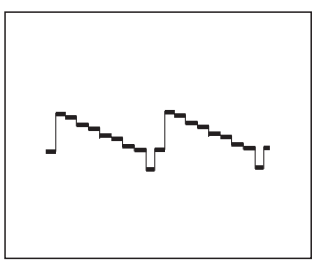
560m Vp-p (H)

❾ IC201 ⑰ REC/PB



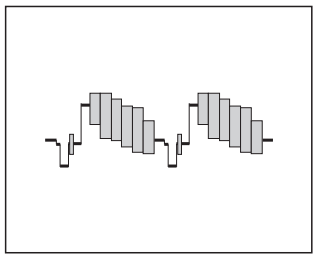
REC: 470m Vp-p (H)
PB : 260m Vp-p (H)

❿ IC201 ⑪ REC/PB



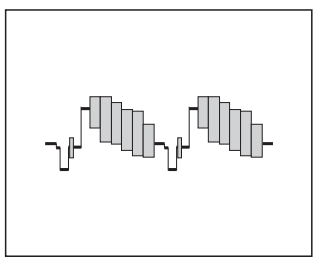
440m Vp-p (H)

⓫ IC201 ⑥⓪ REC



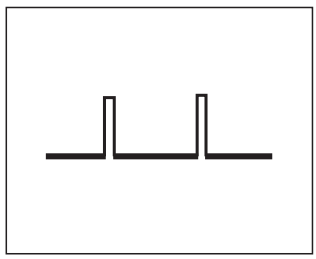
1 Vp-p (H)

⓬ IC201 ⑤⑦ REC/PB



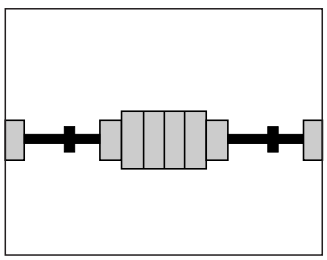
2.2 Vp-p (H)

⓭ IC201 ⑤③ REC/PB



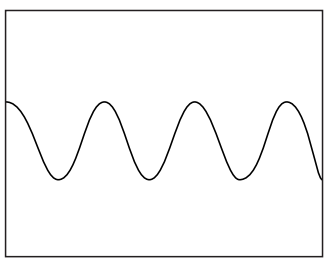
5 Vp-p (H)

⓮ IC201 ⑤⓪ PB



640m Vp-p (H)

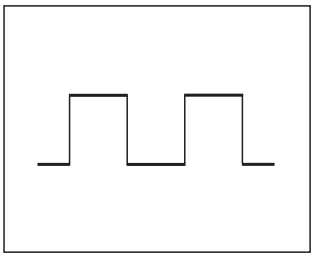
⓯ IC201 ②⑥ REC/PB



1.1 Vp-p (3.58 MHz)

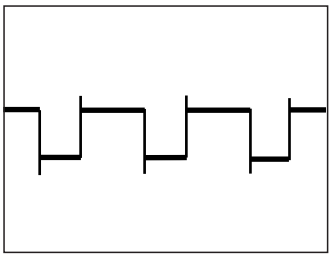
• Waveforms

❶ IC161 ㉔ REC/PB



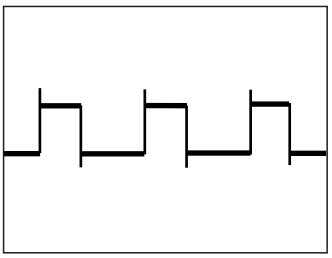
4.9 Vp-p (2 V)

❷ IC161 ㉛ REC



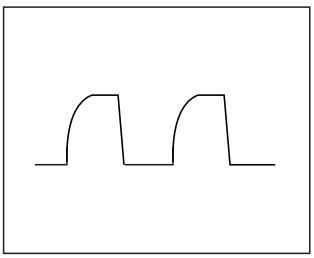
5 Vp-p (2 V)

❸ IC161 ㉜ REC



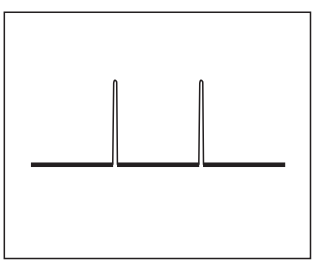
5 Vp-p (2 V)

❹ IC161 ㊳ REC/PB



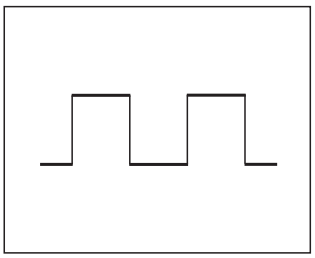
4.2 Vp-p (360 Hz)

❺ IC161 ㊴ REC/PB



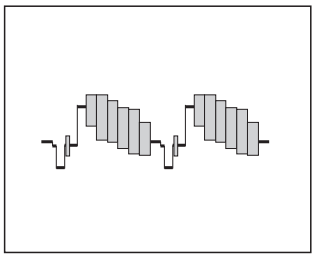
4.7 Vp-p (2 V)

❻ IC161 ㊵ REC/PB



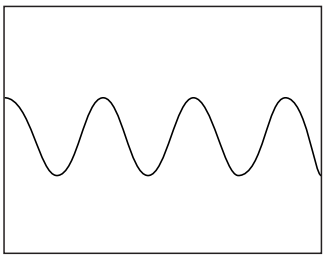
4 Vp-p (1 kHz)

❼ IC161 ㊸,㊺ REC/PB



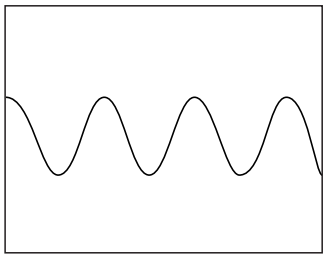
2 Vp-p (H)

❽ IC161 ㊷ REC/PB



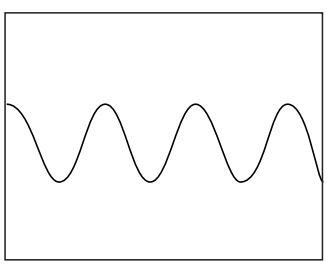
2.4 Vp-p (14.318 MHz)

❾ IC161 ㊾ REC/PB



2.2 Vp-p (32.768 kHz)

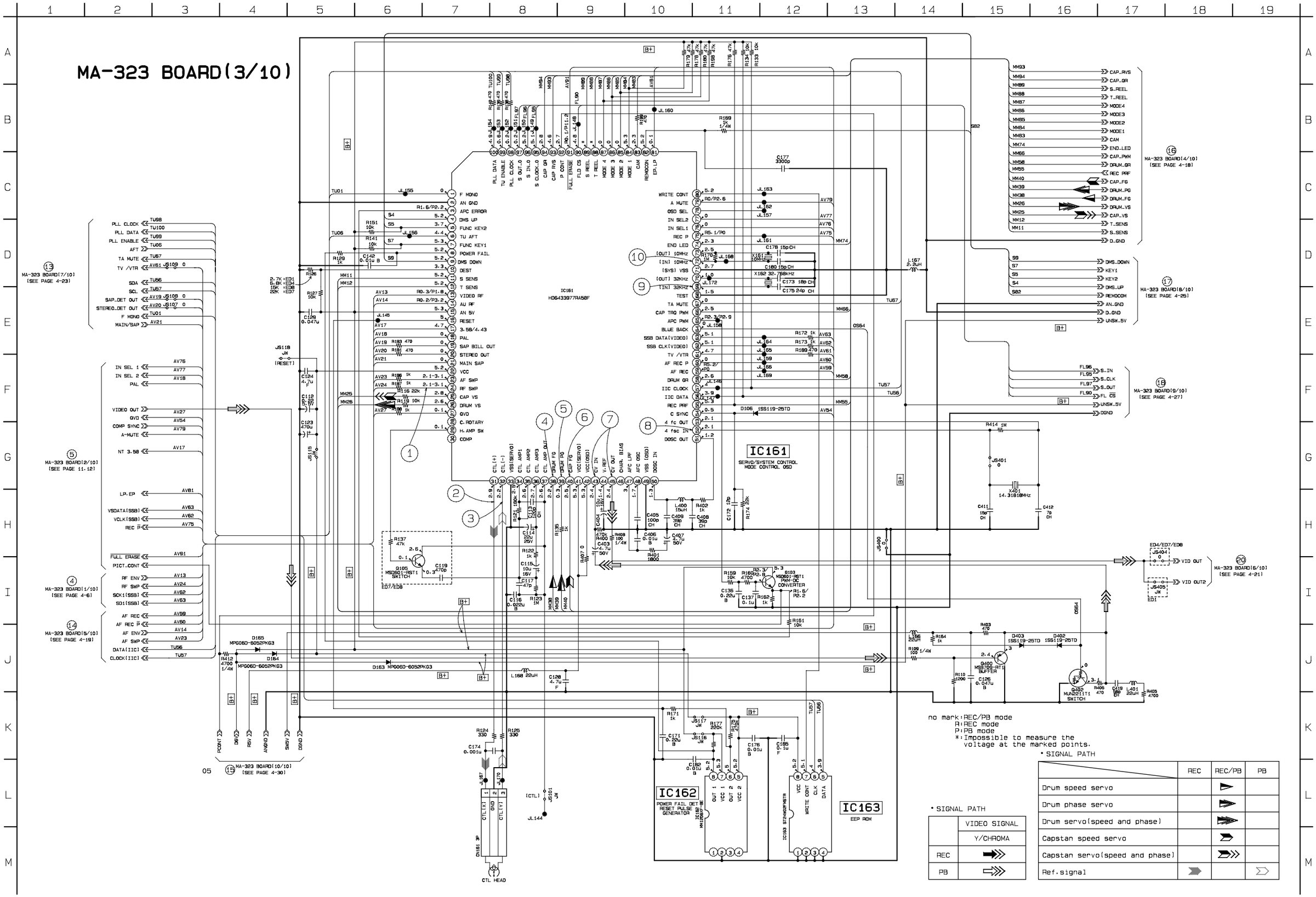
❿ IC161 ㉒ REC/PB



3.2 Vp-p (10 MHz)

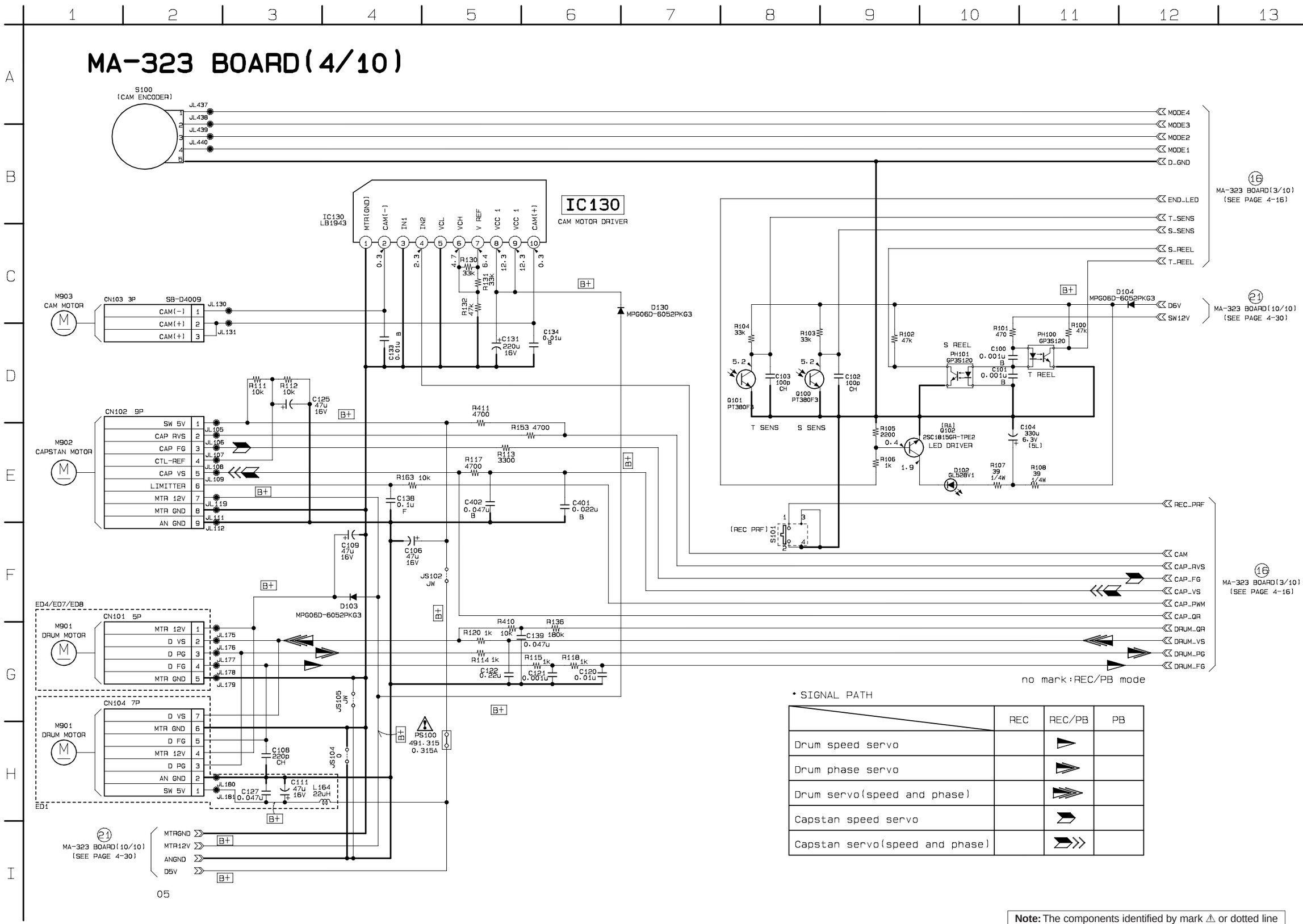
MA-323 (SYSTEM CONTROL) SCHEMATIC DIAGRAM **• See page 4-9 to 4-10 for printed wiring board.**

– Ref. No.: MA-323 board; 2,000 series –



MA-323 (SERVO CONTROL) SCHEMATIC DIAGRAM • See page 4-9 to 4-10 for printed wiring board.

– Ref. No.: MA-323 board; 2,000 series –



• SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		▶▶	
Drum servo(speed and phase)		▶▶▶	
Capstan speed servo		▶	
Capstan servo(speed and phase)		▶▶»	

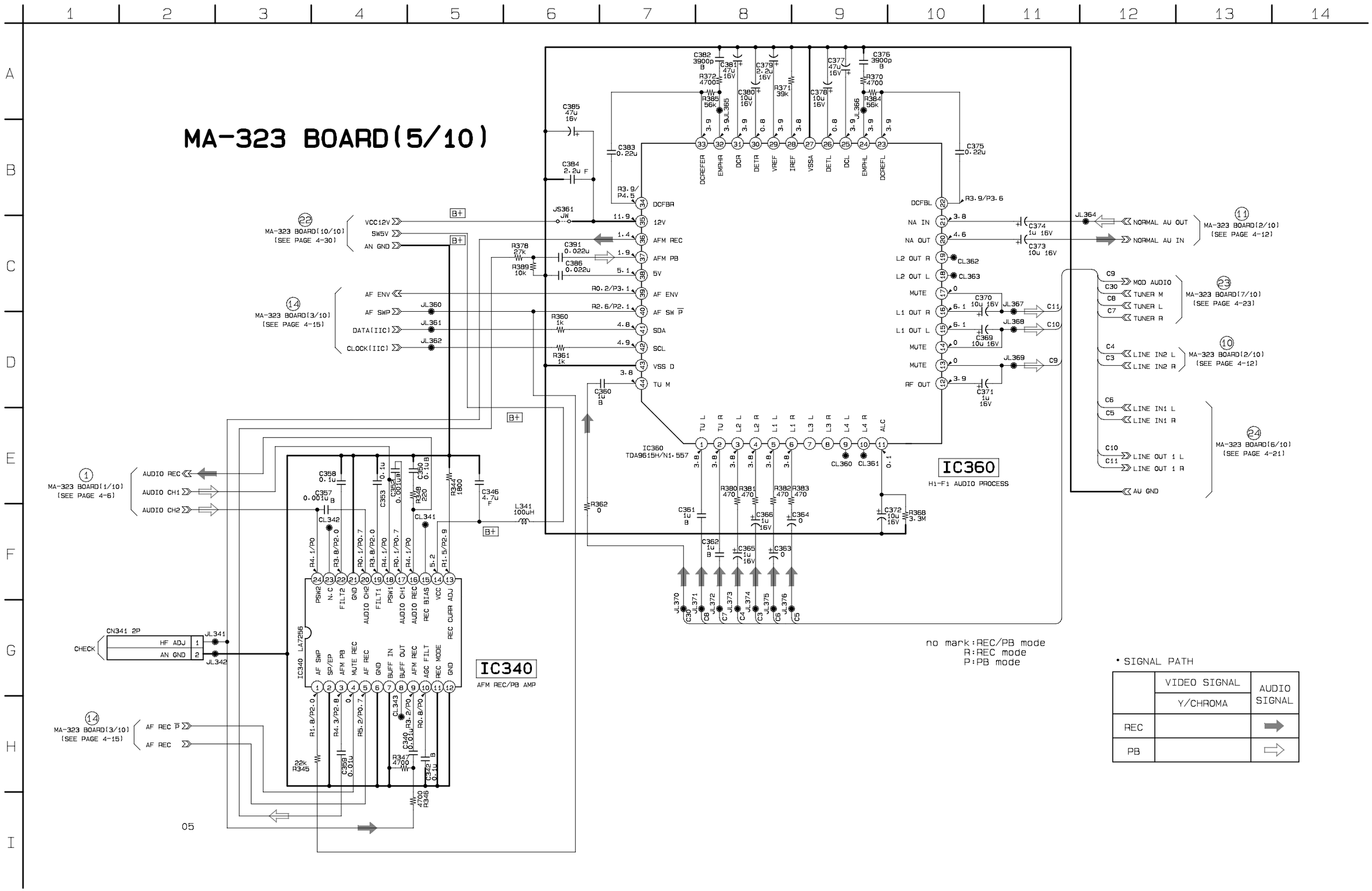
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SERVO CONTROL
MA-323 (4/10)

MA-323 (Hi-Fi AUDIO) SCHEMATIC DIAGRAM **• See page 4-9 to 4-10 for printed wiring board.**

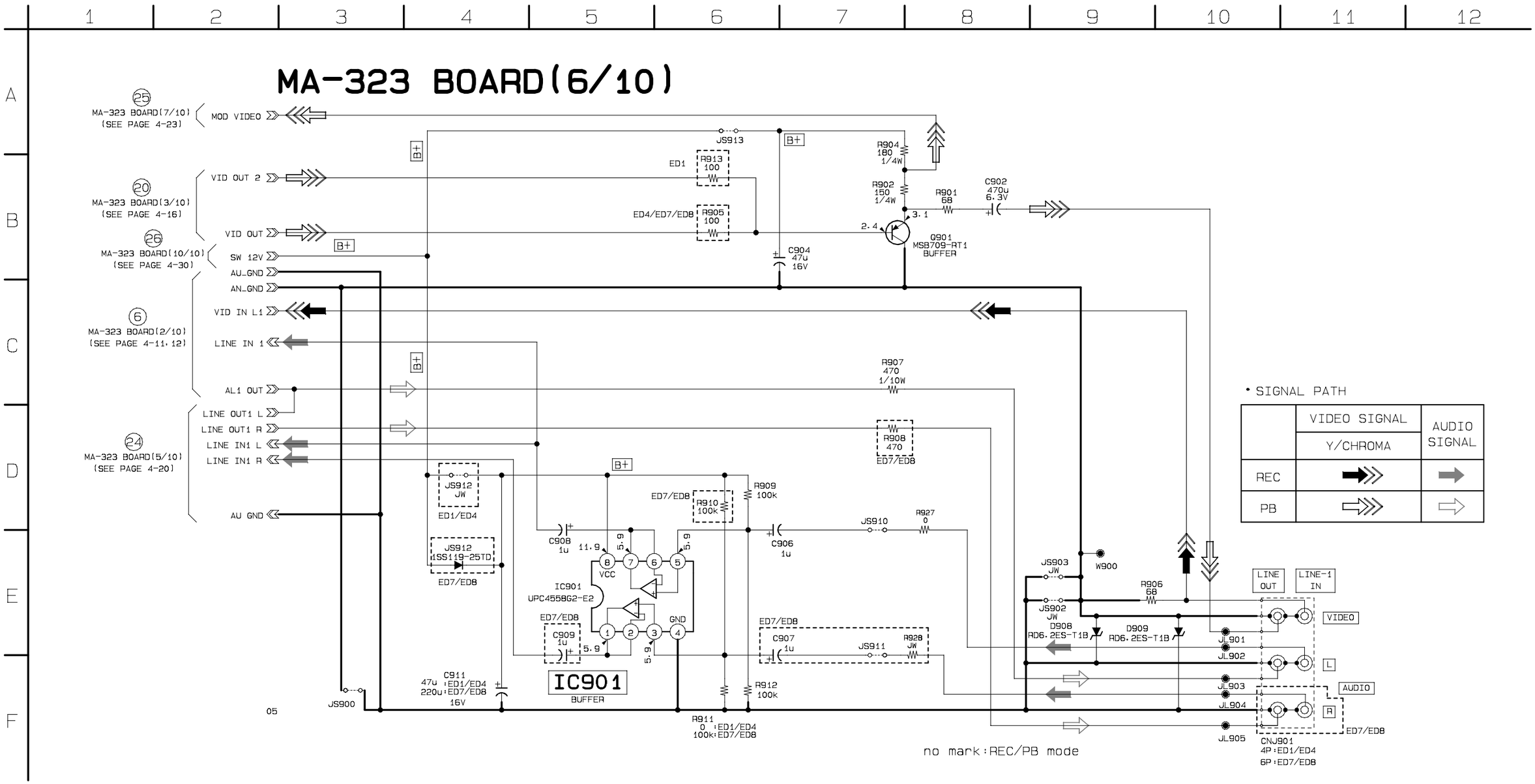
– Ref. No.: MA-323 board; 2,000 series –

– SLV-ED7/ED8 –



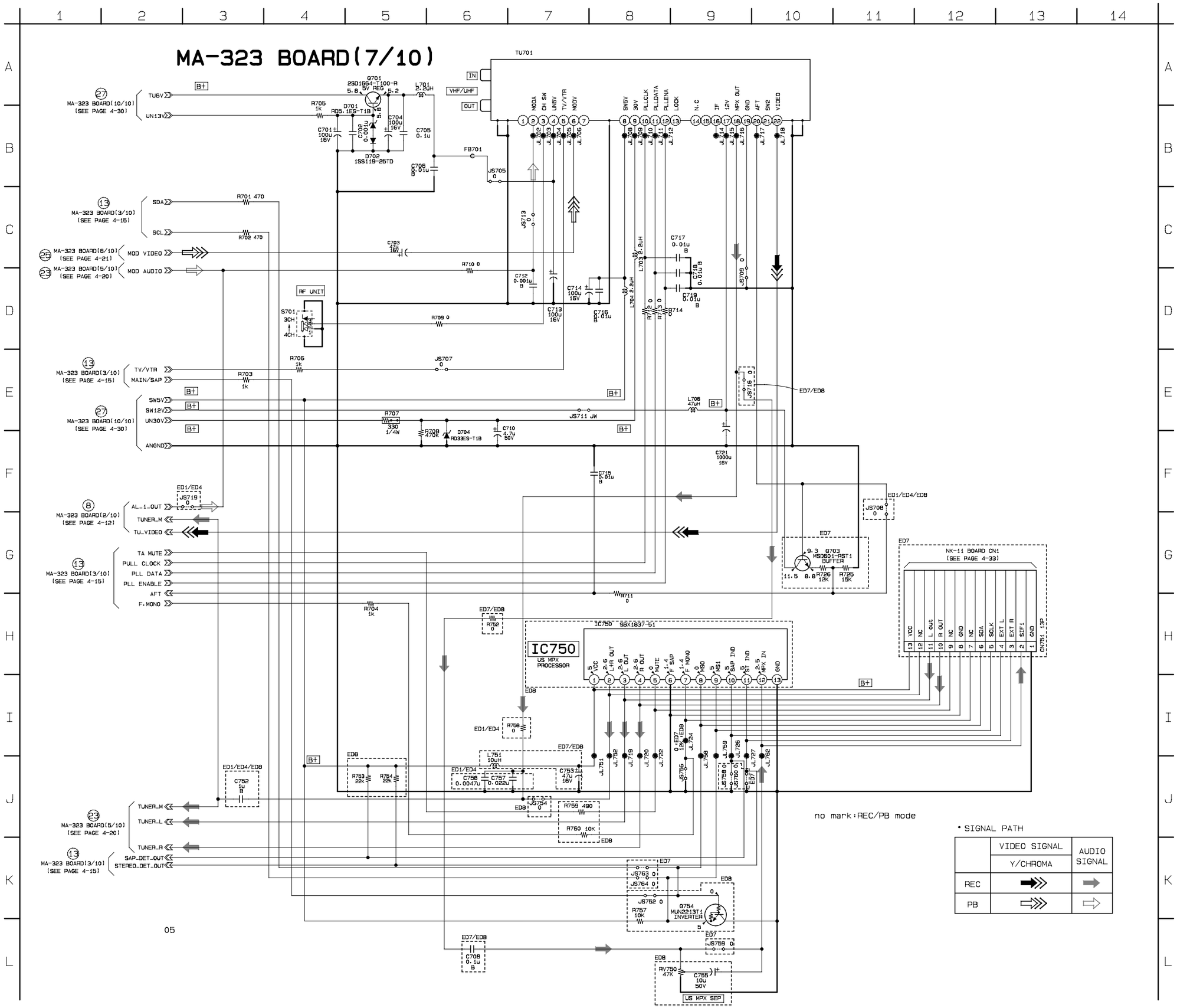
MA-323 (IO) SCHEMATIC DIAGRAM • See page 4-9 to 4-10 for printed wiring board.

– Ref. No.: MA-323 board; 2,000 series –



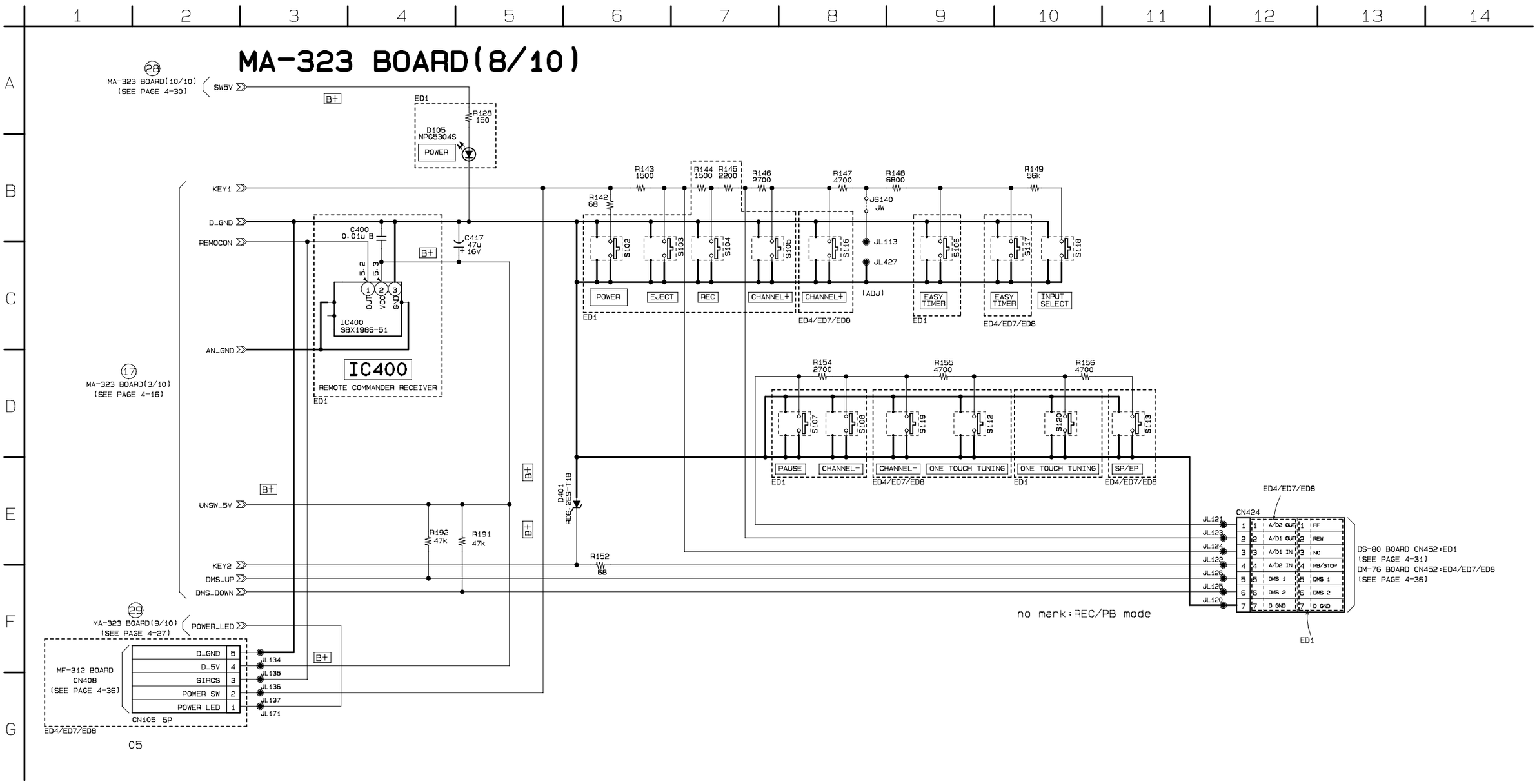
MA-323 (TUNER) SCHEMATIC DIAGRAM **• See page 4-9 to 4-10 for printed wiring board.**

– Ref. No.: MA-323 board; 2,000 series –



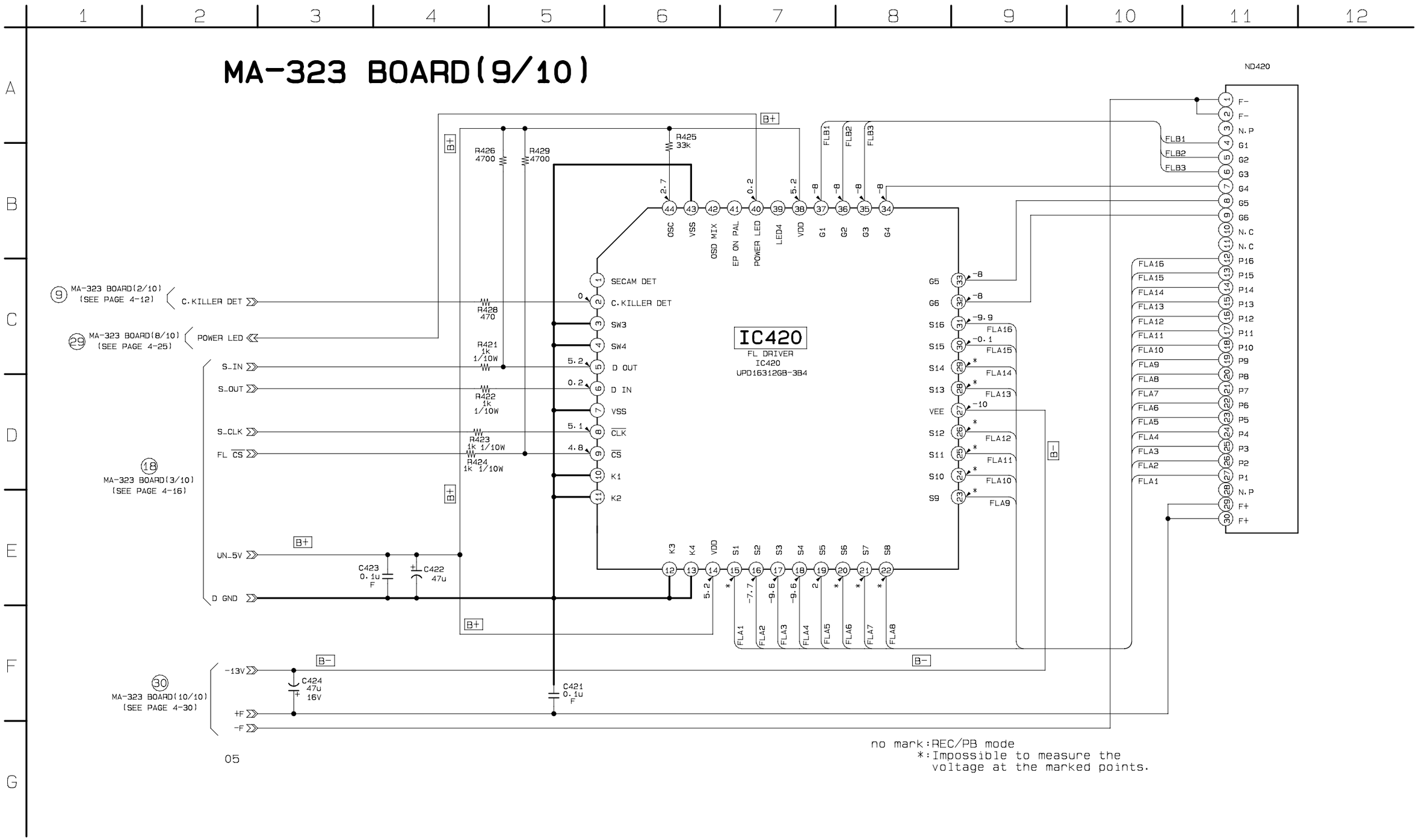
MA-323 (MODE CONTROL) SCHEMATIC DIAGRAM • See page 4-9 to 4-10 for printed wiring board.

– Ref. No.: MA-323 board; 2,000 series –



MA-323 (FL DRIVER) SCHEMATIC DIAGRAM **• See page 4-9 to 4-10 for printed wiring board.**

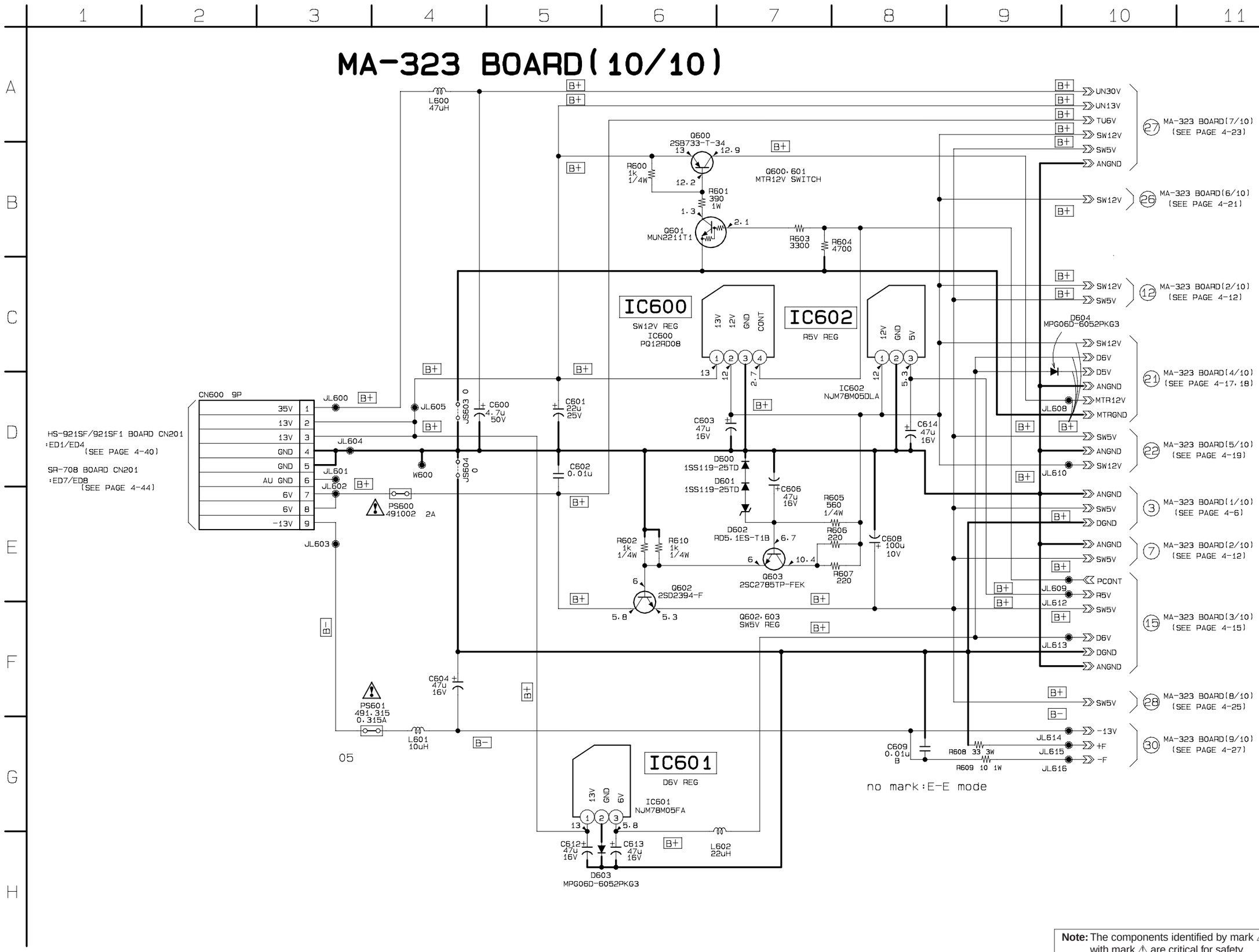
– Ref. No.: MA-323 board; 2,000 series –



MA-323 (POWER SUPPLY) SCHEMATIC DIAGRAM **• See page 4-9 to 4-10 for printed wiring board.**

– Ref. No.: MA-323 board; 2,000 series –

MA-323 BOARD(10/10)

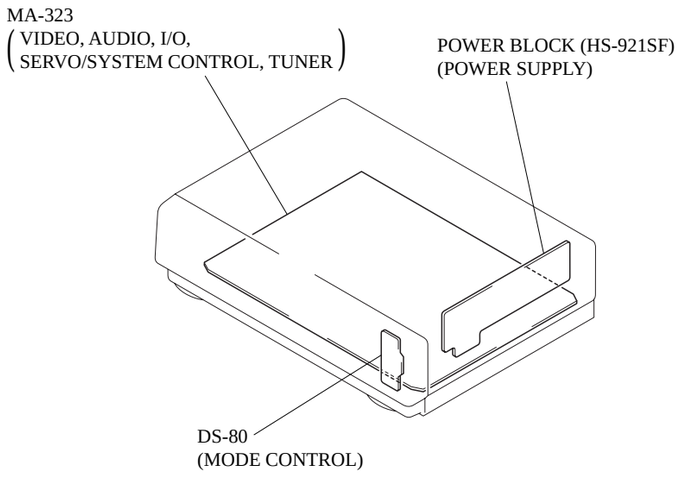


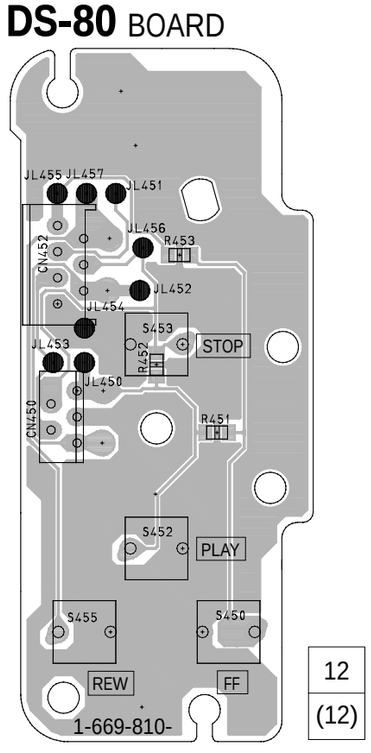
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

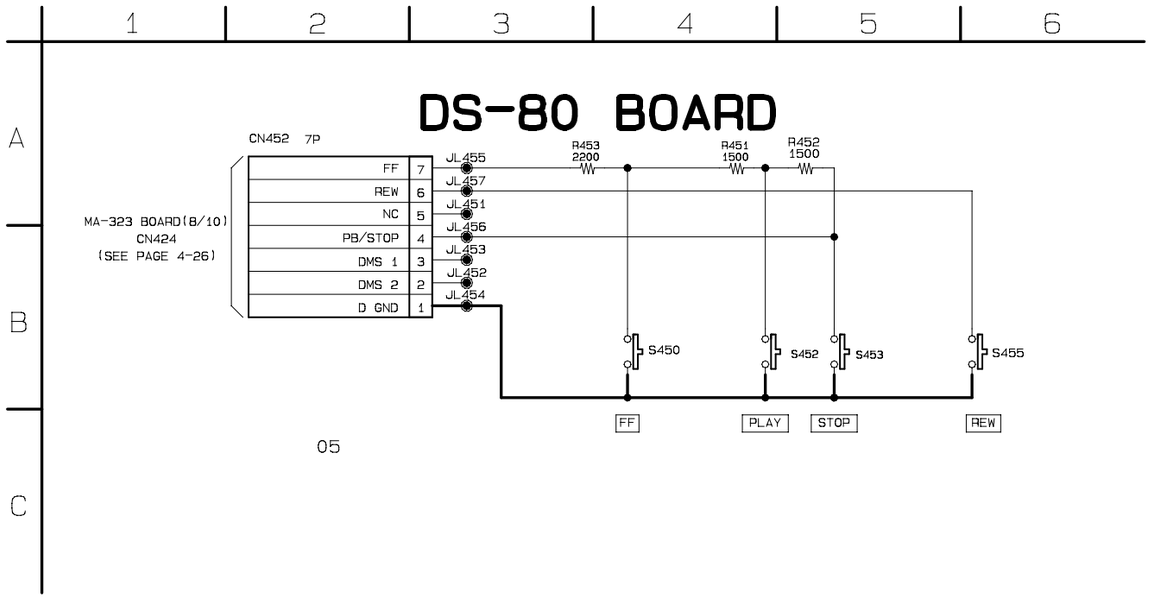
DS-80 (MODE CONTROL) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

– Ref. No.: DS-80 board; 2,000 series –

– SLV-ED1 –



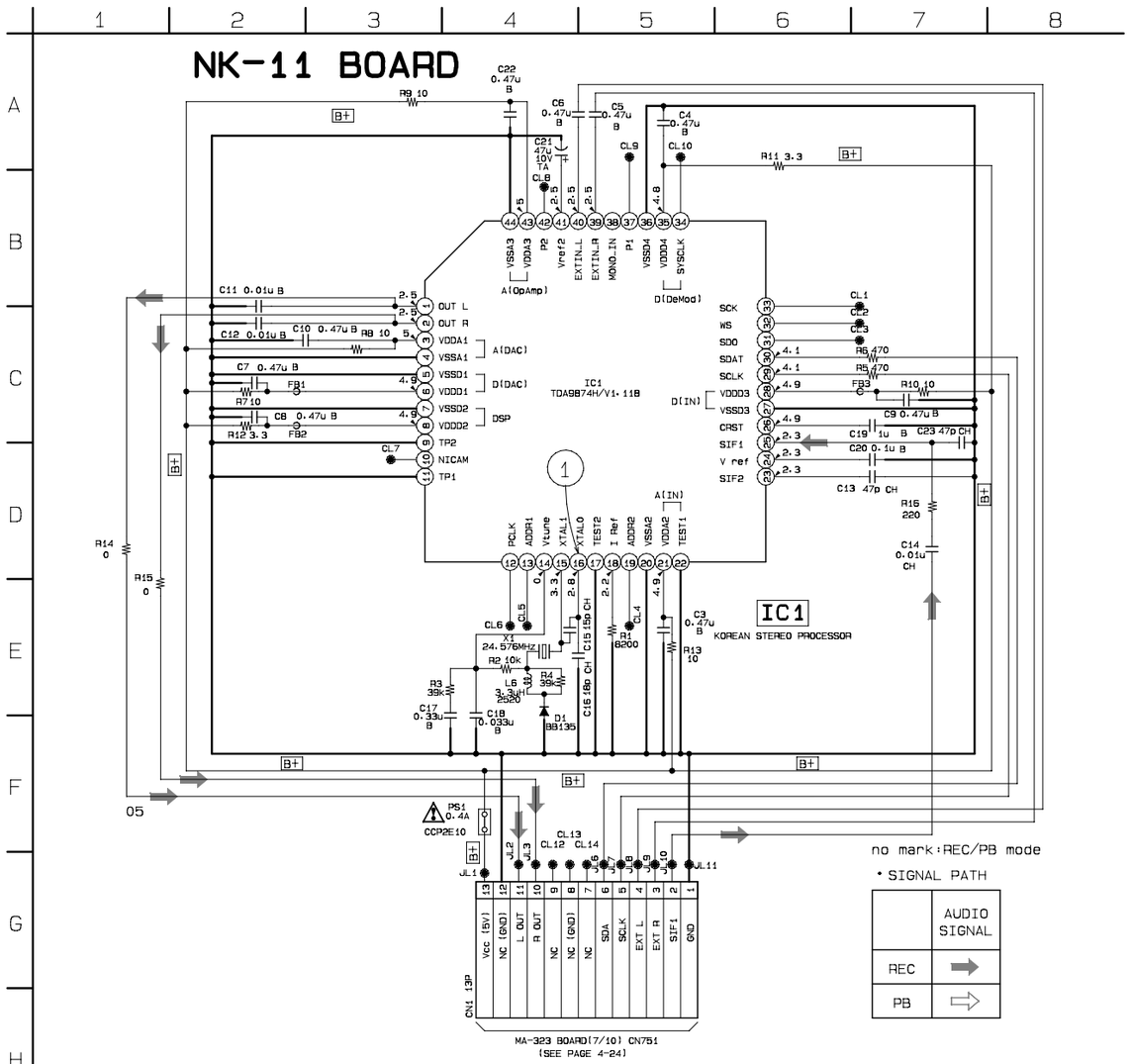




NK-11 (KOREAN STEREO) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

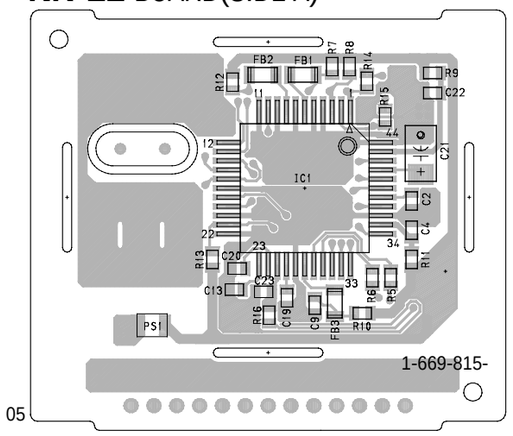
– Ref. No.: NK-11 board; 1,000 series –

– SLV-ED7 –

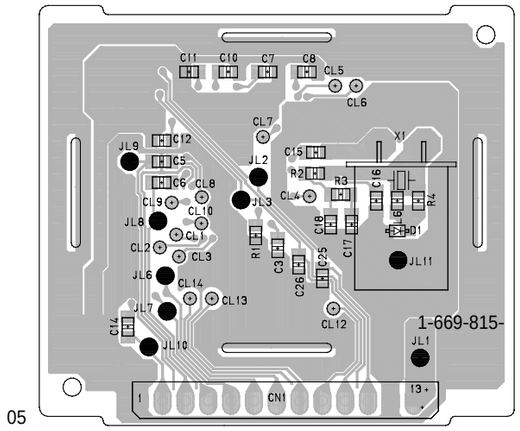


There are few cases that the part isn't mounted in this model is printed on this diagram.

NK-11 BOARD(SIDE A)

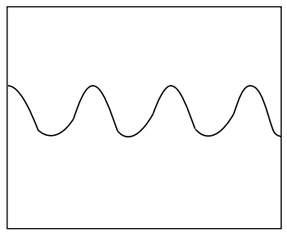


NK-11 BOARD(SIDE B)



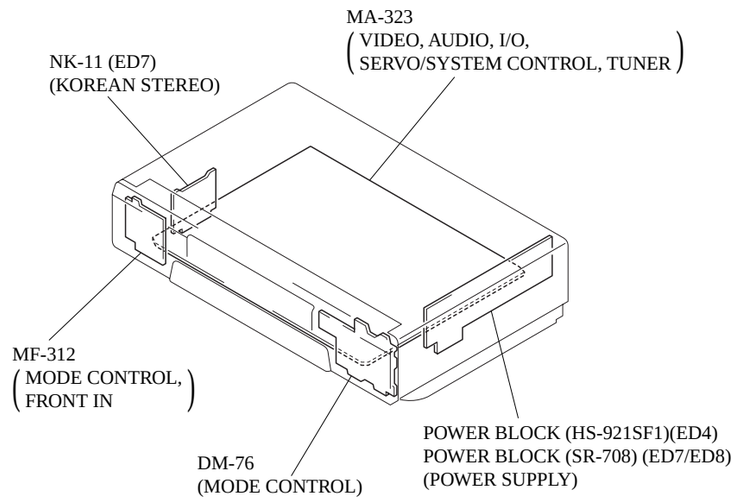
• Waveform

❶ IC1 ⑯ REC/PB



740m Vp-p (24.576 MHz)

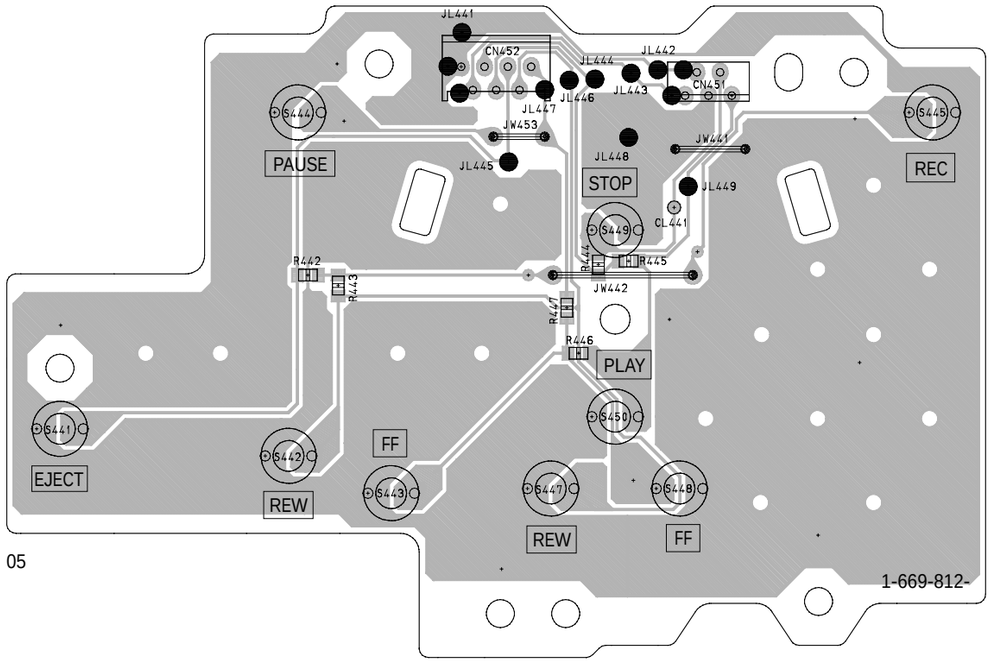
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.



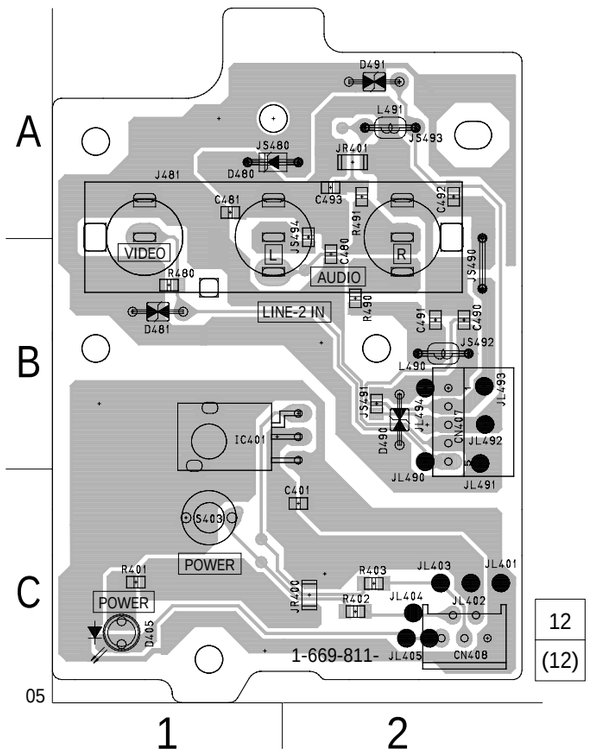
– SLV-ED4/ED7/ED8 –

There are few cases that the part isn't mounted in this model is printed on this diagram.

DM-76 BOARD

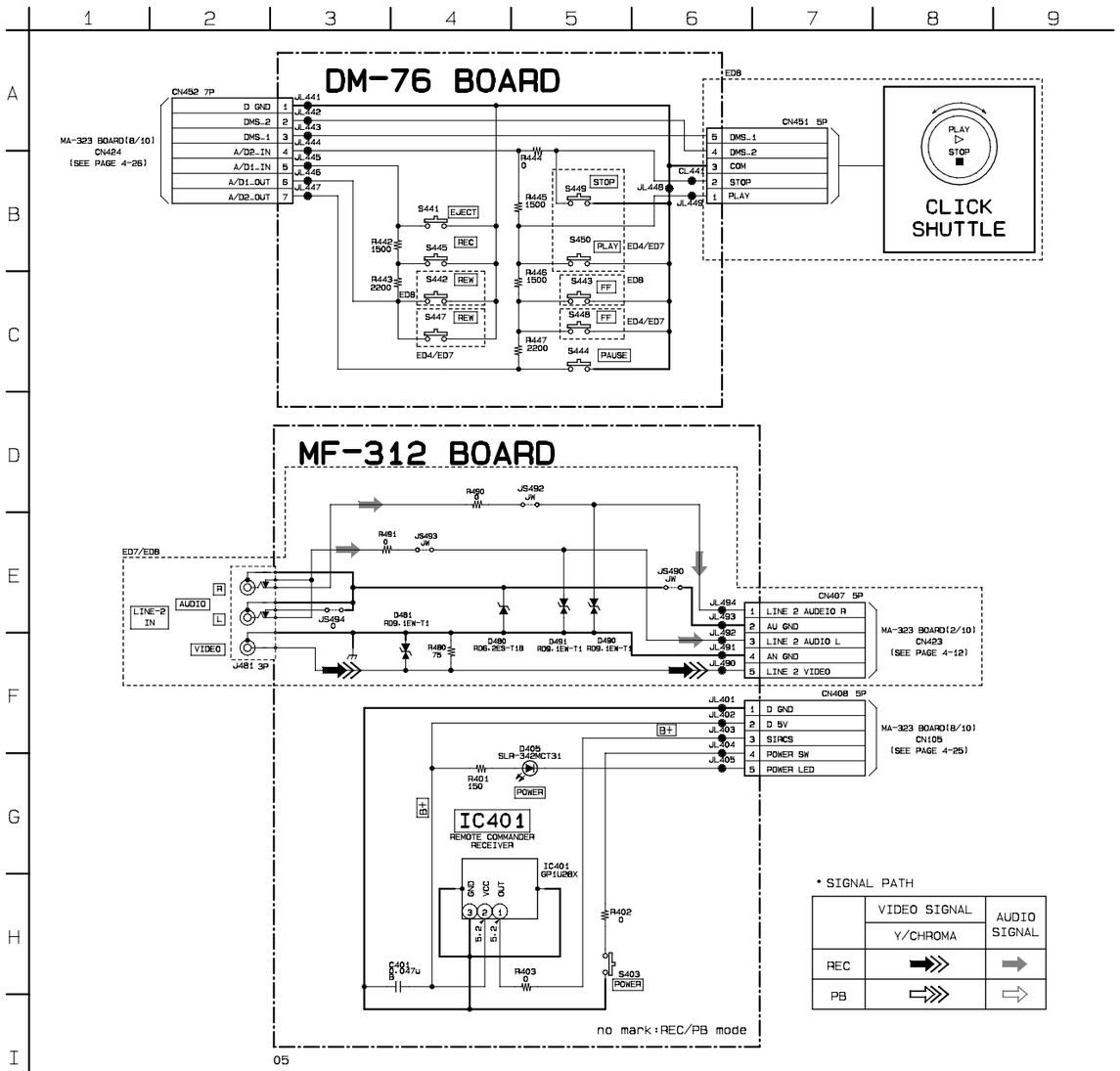


MF-312 BOARD



MF-312 BOARD

CN407	B-2
CN408	C-2
D405	C-1
D480	A-1
D481	B-1
D490	B-2
D491	A-2
IC401	B-1



• SIGNAL PATH

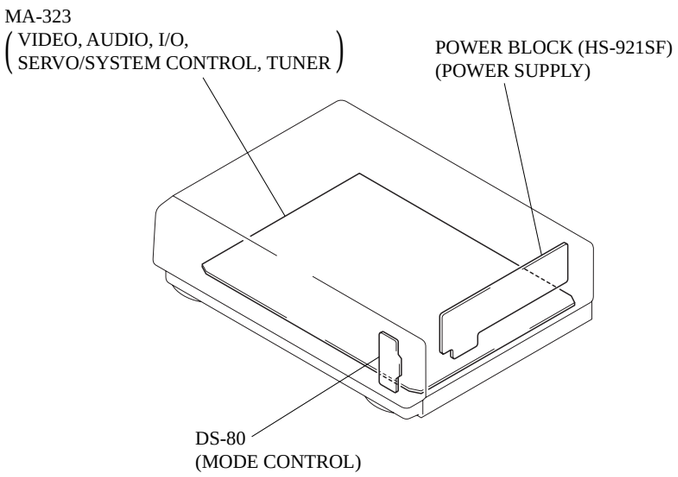
	VIDEO SIGNAL	AUDIO SIGNAL
	Y/CHROMA	
REC	➡	➡
PB	⇨	⇨

HS-921SF/921SF1 (POWER SURRLY) PRINTED WIRING BOARD

– Ref. No.: HS-921SF/921SF1 board; 3,000 series –

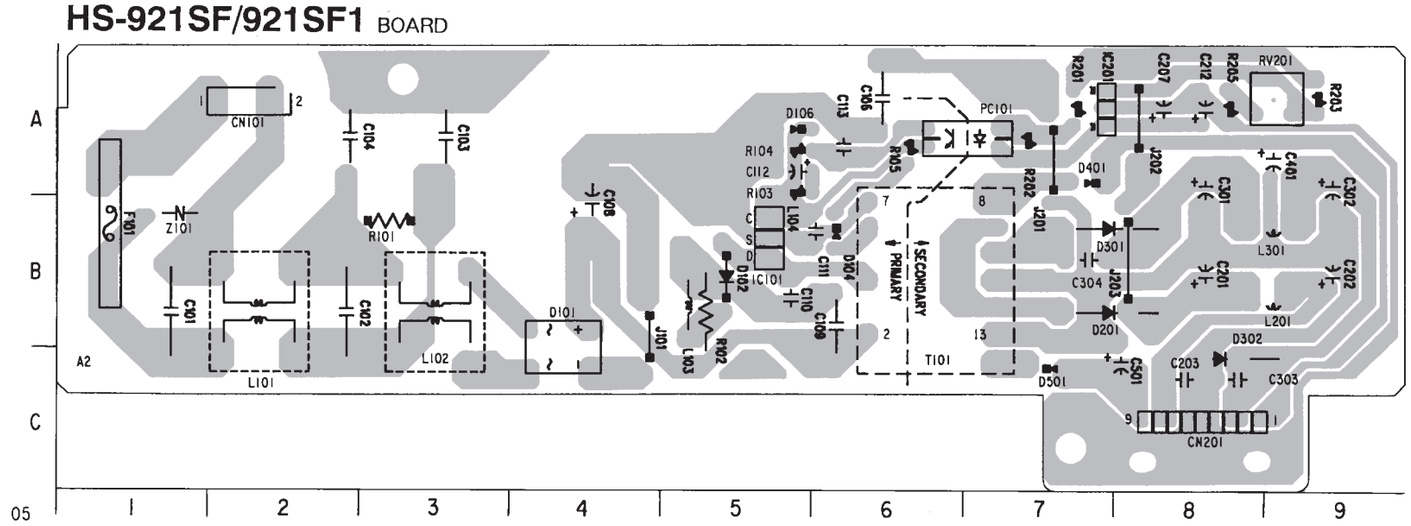
There are few cases that the part isn't mounted in this model is printed on this diagram.

– SLV-ED1/ED4 –

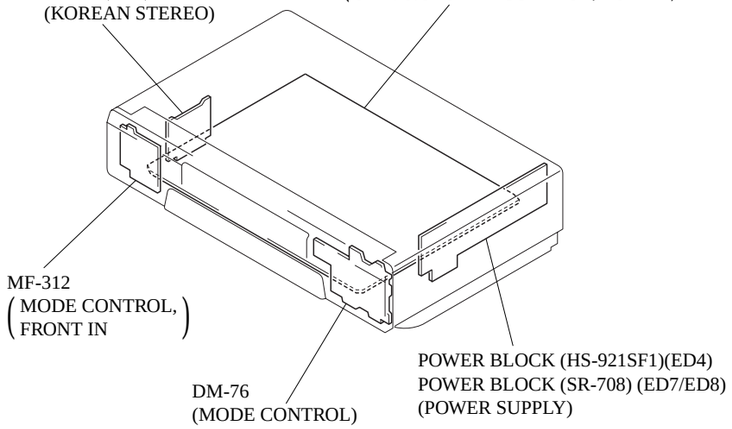


HS-921SF/921SF1
BOARD

CN101	A-2
CN201	C-8
D101	B-4
D102	B-5
D104	B-6
D106	A-5
D201	B-7
D301	B-7
D302	C-8
D401	A-7
D501	C-7
IC101	B-5
IC201	A-7



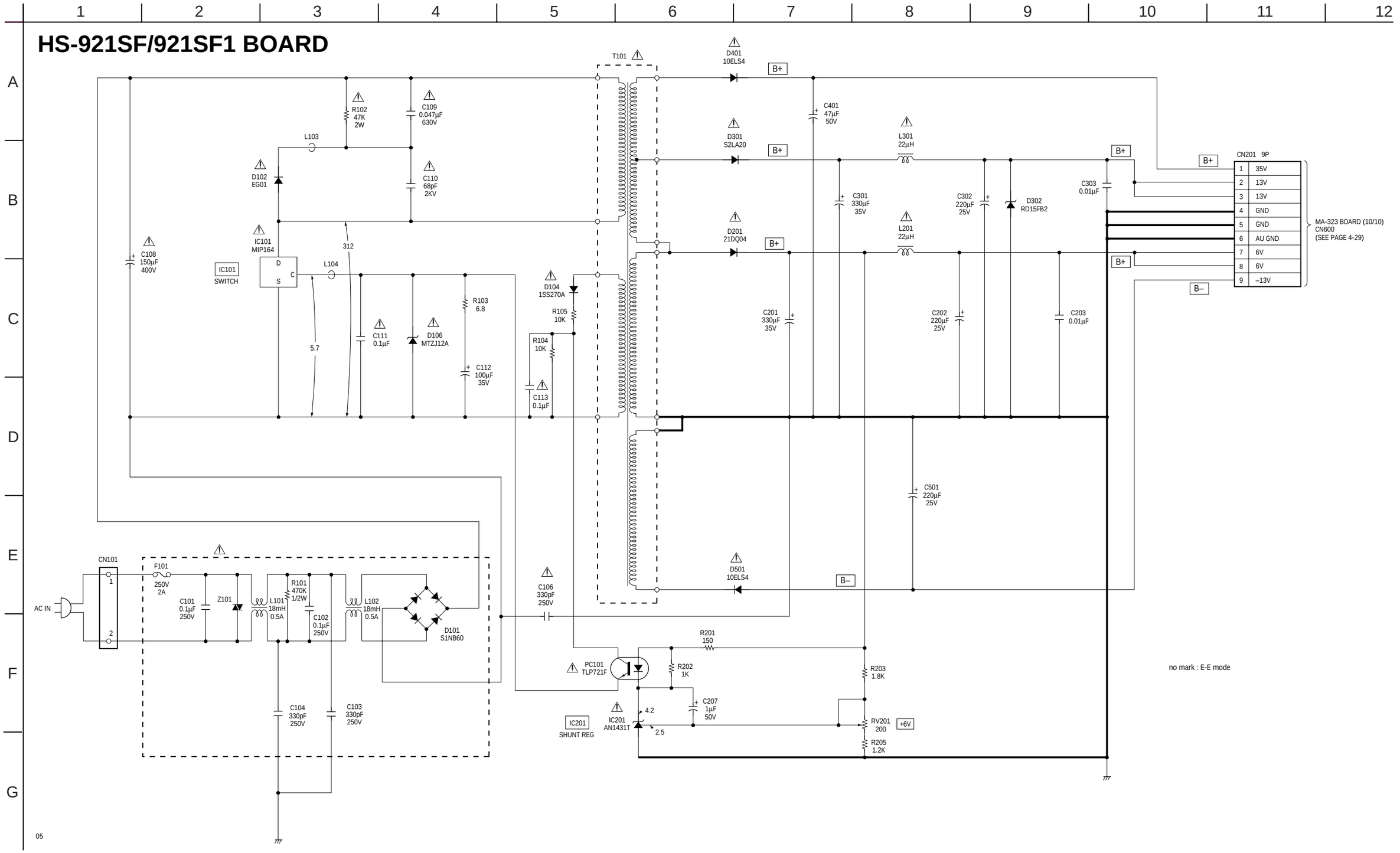
HS-921SF: 1-468-312-11
HS-921SF1: 1-468-312-21



HS-921SF/921SF1 (POWER SUPPLY) SCHEMATIC DIAGRAM

– Ref. No.: HS-921SF/921SF1 board; 3,000 series –

– SLV-ED1/ED4 –



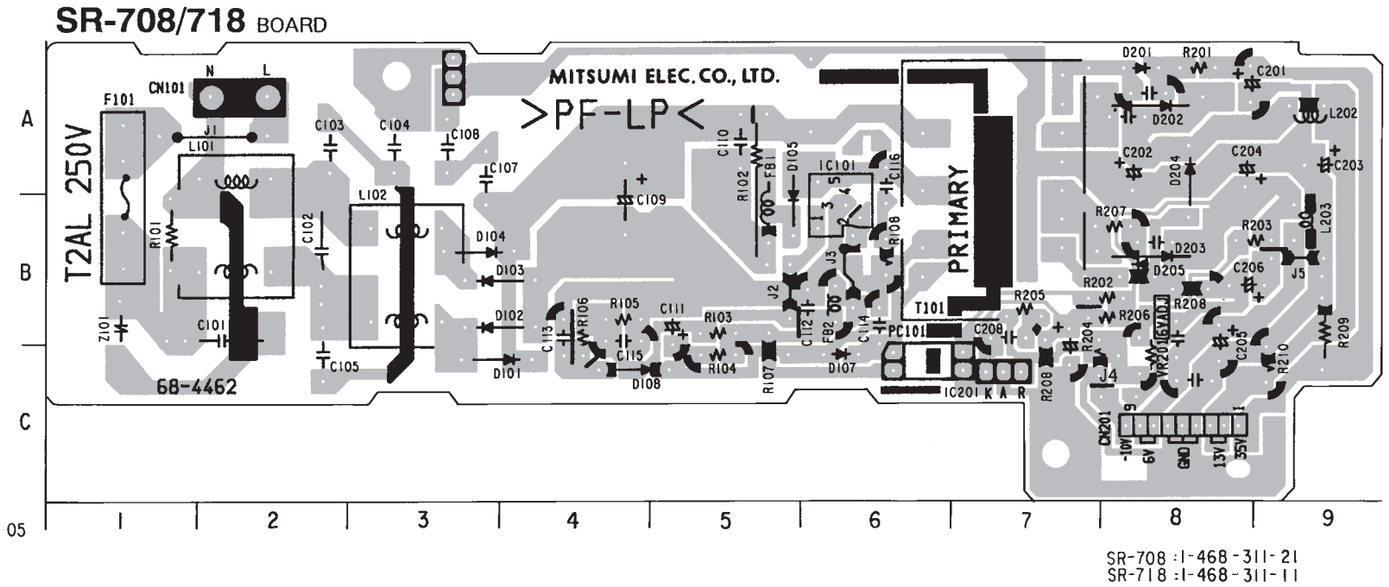
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SR-708 (POWER SUPPLY) PRINTED WIRING BOARD

– Ref. No.: SR-708 board; 4,000 series –

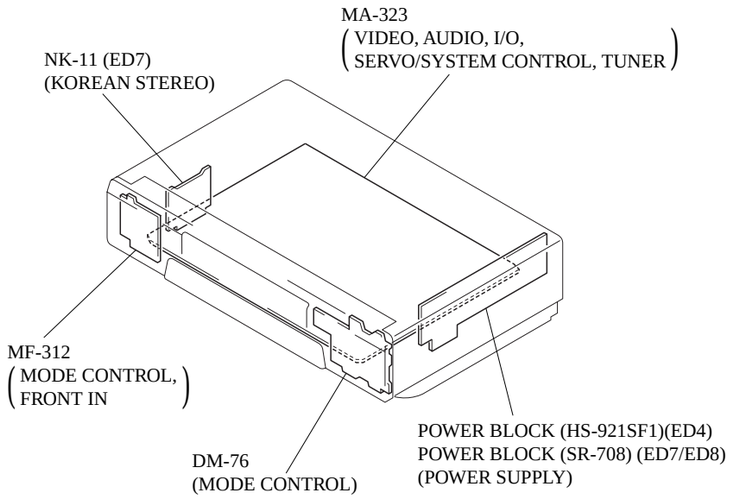
– SLV-ED7/ED8 –

There are few cases that the part isn't mounted in this model is printed on this diagram.



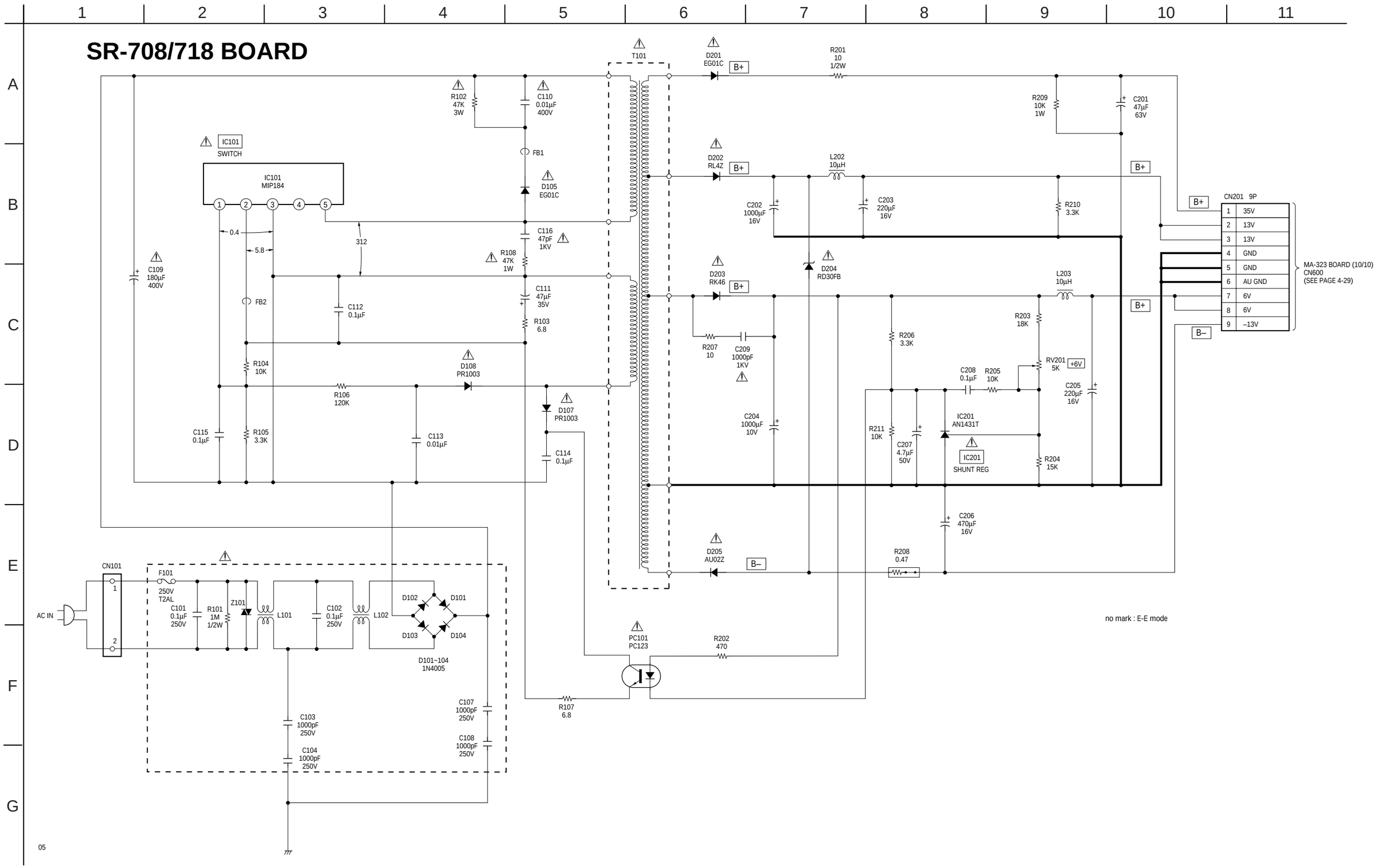
SR-708 BOARD

CN101	A-2
CN201	C-8
D101	C-3
D102	B-3
D103	B-3
D104	B-3
D105	B-5
D107	C-6
D108	C-4
D201	A-8
D202	A-8
D203	B-8
D204	A-8
D205	B-8
IC101	B-6
IC201	C-7



SR-708 (POWER SUPPLY) SCHEMATIC DIAGRAM
– Ref. No.: SR-708 board; 4,000 series –

– SLV-ED7/ED8 –



Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. SYSTEM CONTROL – VIDEO BLOCK INTERFACE (MA-323 BOARD IC161)

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE THREAD- ING	TAPE UNTHREAD- ING	PB	REC • PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC • PAUSE
RF SWP (SW30)	MA-323 IC161㉔	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
QVD	MA-323 IC161㉗	O	L	L	L	*2	*3	*3	*3	*3	*3	L	L
C SYNC	MA-323 IC161㊹	I	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4

∗1. 30 Hz pulse with 50% duty cycle. Synchronized with rotation of drum.
∗2. Normal PB "L". V period "H" pulse when ×1.
∗3. V period "H" pulse.
∗4. Composite Sync signal (positive polarity).

5-2. SYSTEM CONTROL – SERVO PERIPHERAL CIRCUIT INTERFACE (MA-323 BOARD IC161)

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREAD- ING	TAPE UNTHREAD- ING	PB	PB • PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC • PAUSE
CAP QR	MA-323 IC161㊹	O	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z	*2	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z
DRM PG	MA-323 IC161㊴	I	*3	*1	*1	*4	*4	*1	*1	*1	*1	*1	*1	*1	*1
DRM FG	MA-323 IC161㊳	I	*3	*6	*6	*4	*4	*6	*6	*6	*6	*6	*6	*6	*6
CAP FG	MA-323 IC161㊵	I	H/L	*5	*5	*4	*4	*5	H/L	*5	*5	*5	*5	*5	H/L
CAP VS	MA-323 IC161㉕	O	*7	*7	*7	*7	*7	*8	*7	*7	*8	*8	*8	*8	*7
DRM VS	MA-323 IC161㉖	O	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9

∗1. 30 Hz pulse.
∗2. Pulse at tape running.
∗3. "L" when drum rotation stop.
∗4. Unstable period pulse.
∗5. Pulse of period in proportion to tape speed.
∗6. 360 Hz pulse.
∗7. Pulse at tape running.
∗8. Approx. 2 msec period "H" or "L" pulse.
∗9. Approx. 1.5 msec period "H" or "L" pulse.

5-3. SYSTEM CONTROL – MECHANISM BLOCK INTERFACE (MA-323 BOARD IC161)

Signal	Pin No.	I/O	EJECTED	CASSETTE LOADING	CASSETTE UNLOADING	TAPE THREAD-ING	TAPE UNTHREAD-ING	STOP	FF	REW	PB	PB • PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC • PAUSE
CAM	MA-323 IC161㊸	O	Hi-Z	H	L	H	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
MODE 1	MA-323 IC161㊹	I	H	L	L	*1	*1	H	H	H	H	H	H	H	H	L	H	H
MODE 2	MA-323 IC161㊺	I	H	L	L	*1	*1	H	H	H	L	L	L	L	L	L	L	L
MODE 3	MA-323 IC161㊻	I	L	L	L	*1	*1	H	L	L	L	L	L	L	L	H	L	L
MODE 4	MA-323 IC161㊼	I	L	H	H	*1	*1	L	H	H	L	L	L	L	L	L	L	L
C IN REC PRF	MA-323 IC161㊺	I	H	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
T REEL FG	MA-323 IC161㊽	I	H/L	H/L	H/L	H/L	H/L	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
S REEL FG	MA-323 IC161㊾	I	H/L	H/L	H/L	*3	*3	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
T/S LED	MA-323 IC161㊹	O (O.D)	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
$\overline{\text{CAP RVS}}$	MA-323 IC161㊸	I	L			H	L	H/L	H	L	H	H	H	H	H	L	H	H
T SENS	MA-323 IC161⑫	I	*4	*4	*4	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
S SENS	MA-323 IC161⑪	I	*4	*4	*4	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6

∗1. Uncertainty.
∗2. "L" when erasing protection tab is bent, "H" when not bent.
∗3. Pulse of period in proportion to reel rotating speed.
∗4. Approx. 2 msec period "H" pulse.
∗5. Pulse at tape running.
∗6. Normally "L". 2 msec period "H" pulse when tape top or tape end is detected.
∗7. When transition to UNLOADING direction: L.
When transition to LOADING direction: H.
When CAM motor is stopped: Hi-Z.

5-4. SYSTEM CONTROL – AUDIO BLOCK INTERFACE (MA-323 BOARD IC161)

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE LOADING	TAPE UNLOADING	PB	PB • PAUSE	SLOW	× 2	CUE	REVIEW	REC	PB • PAUSE
AU RF	MA-323 IC161⑭	I	AF RF envelope signal input terminal for automatic tracking.										
A MUTE	MA-323 IC161㊴	O (O.D)	Hi-Z	Hi-Z	Hi-Z	Hi-Z	H	H	H	H	H	L	L
AF REC P	MA-292 IC161㊵	O	H	H	H	H	H	H	H	H	H	L	H
AF SWP	MA-292 IC161㉓	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
$\overline{\text{FULL ERS}}$	MA-292 IC161㉑	O (O.D)	H	H	H	H	H	H	H	H	H	L	H
AF REC	MA-323 IC161㊾	O	L	L	L	L	L	L	L	L	L	H	H
REC P	MA-323 IC161㉕	O	L	L	L	L	L	L	L	L	L	H	L

*1. 30 Hz 50% duty pulse approx. 5 msec delayed from RF SW P.

5-5. SERVO/SYSTEM/TIMER/TUNER CONTROL MICROPROCESSOR PIN FUNCTION (MA-323 BOARD IC161)

Pin No.	Pin Name	I/O	Function
1	F MONO	O	TUNER Audio select signal
2	AN GND	–	Analog Ground
3	APC ERROR	I	APC ERROR Voltage input
4	DMS UP	I	Click Shuttle fowared/reverse signal input (DMS models only)
5	FUNC. KEY2	I	Function Key Analog voltage input
6	TU AFT	I	AFT (Auto fine tuning signal input)
7	FUNC. KEY1	I	Function Key Analog voltage input
8	POWER FAIL	I	Power failure detect signal input
9	DMS DOWN	I	Click Shuttle fowared/reverse signal input (DMS models only)
10	DEST	I	Destination set
11	S SENS	I	Supply end sensor signal input
12	T SENS	I	Take up end sensor signal input
13	VIDEO RF	I	Video RF Envelop input
14	AU RF	I	Hifi Audio Envelop input
15	AN 5V	–	Power supply
16	RESET	I	RESET signal input
17	3.58/4.43	O	NTSC color freq. judge signal
18	PAL	O	“H”: PAL (Video block control signal)
19	SAP BILL OUT	I	MAIN/SAP judge input
20	STEREO OUT	I	STEREO/MONO judge input
21	MAIN/SAP	O	MAIN/SAP select signal
22	VCC	–	Power supply
23	AF SWP	O	AF switching pulse output
24	RF SWP	O	RF switching pulse output
25	CAP VS	O	Capstan error signal output
26	DRUM VS	O	Drum motor error signal output
27	QVD	O	Quasi VD pulse output
28	N.C.	–	Not used
29	H. AMPSW	O	“H”: A-DUB mode (CTL Amp. Gain. Coutrol)
30	N.C.	–	Not used
31	CTL (+)	I/O	CTL head signal Input/Output (rec mode)
32	CTL (–)	I/O	CTL head signal Input/Output (rec mode)
33	VSS (SERVO)	–	Ground
34	CTL-AMP1	I	CTL Amp. Coutrol (Gain set)
35	CTL-AMP2	I	CTL Amp. Coutrol (Gain set)
36	CTL-AMP3	I	CTL Amp. Coutrol (Gain set)
37	CTL-AMP OUT	O	CTL Amp. Output (For Check)
38	DRUM FG	I	Drum FG Schmitt amp. input
39	DRUM PG	I	Drum PG Schmitt amp. input
40	CAP FG	I	Capstan FG Schmitt input
41	VCC (SERVO)	–	Power supply
42	VCC(OSD)	–	Power supply
43	CV IN	I	Composite Video signal input
44	VREF	I	Reference bias and clamp bias power pin
45	CV OUT	O	Composite Video signal output
46	N.C.	–	Not used
47	AFC LPF	I	AFC LPF pin
48	AFC OSC	I	AFC oscillator pin
49	VSS (OSD)	–	Ground
50	DOSC-IN	I	OSD dot clock oscillator (input)

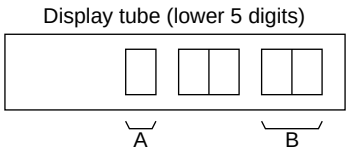
Pin No.	Pin Name	I/O	Function
51	DOSC-OUT	O	OSD dot clock oscillator (output)
52	4FSC-OUT	O	OSD 4fsc oscillator terminal (output)
53	4FSC-IN	I	OSD 4fsc oscillator terminal (input)
54	CSYNC	I	Composite Sync signal input
55	REC PRF	I	Erasing protection tab. Cassette in detection
56	IIC DATA	O	EEP ROM, Hifi IC, Tuner/Serial communication signal (IIC DATA)
57	IIC CLOCK	O	EEP ROM, Hifi IC, Tuner/Serial communication signal (IIC CLOCK)
58	DRUM QR	O	Drum motor step driving
59	AF REC	O	“H” output when Hifi audio REC
60	AF REC P	O	“L” output when Hifi audio REC pause
61	TV/VTR	O	RF output control
62	SSB CLOCK (VIDEO)	O	Video, Video Amp. Serial communication signal (CLOCK)
63	SSB DATA (VIDEO)	O	Video, Video Amp. Serial communication signal (DATA)
64	BLUE BACK	O	OSD block control signal output
65	APC PWM	O	APC PWN signal
66	CAP TRQ PWM	O	Capstan TRQ PWN output
67	TA MUTE	O	“H” output when Tuner mute
68	TEST	I	Fixed to Ground
69	32kHz (IN)	I	Timer Clock terminal (32kHz)
70	32kHz (OUT)	O	Timer Clock terminal (32kHz)
71	VSS	–	Ground
72	10MHz (IN)	I	System clock terminal (10MHz)
73	10MHz (OUT)	O	System clock terminal (10MHz)
74	END LED	O	Top/End LED ON/OFF control
75	REC P	O	“L” output when REC pause mode
76	IN SEL 1	O	LINE-INPUT selection control signal-1
77	IN SEL 2	O	LINE-INPUT selection control signal-2
78	OSD SEL	–	Not used
79	A MUTE	O	“H” Audio mute signal outout
80	WRITE CONT	O	EEPROM write timing control
81	EP. LP	O	“H” : “LP/EP” mode
82	REMOCON	I	Remote control signal (SIRCS) input
83	CAM	O	CAM motor control
84	MODE 1	I	Mechanism section CAM encoder input (data1)
85	MODE 2	I	Mechanism section CAM encoder input (data2)
86	MODE 3	I	Mechanism section CAM encoder input (data3)
87	MODE 4	I	Mechanism section CAM encoder input (data4)
88	T REEL	I	T side reel FG input
89	S REEL	I	S side reel FG input
90	FLD CS	O	FIP driver chip select signal output
91	FUll ERASE	O	Full erase head on/off control signal
92	P CONT	O	Power Supply control signal
93	CAP RVS	O	Capstan reverse control signal H when Reverse
94	CAP QR	O	Capstan step driving
95	S CLOCK 0	O	Serial communication signal (Serial clock)
96	S IN 0	I	Serial communication signal (Data input)
97	S OUT 0	O	Serial communication signal (Data output)
98	PLL CLOCK	O	TUNER PLL clock
99	TU ENABLE	O	TUNER PLL signal chip select
100	PLL DATA	O	TUNER PLL data

5-6. KOREAN STEREO PROCESSOR PIN FUNCTION (NK-11 BOARD IC1)

Pin. No.	Pin Name	I/O	Function
1	OUTL	O	Analog output left
2	OUTR	O	Analog output right
3	VDDA1	–	Analog power supply; DAC circuitry
4	VSSA1	–	Analog ground; DAC circuitry
5	VSSD1	–	Digital ground; DAC circuitry
6	VDDD1	–	Digital power supply; DAC circuitry
7	VSSD2	–	Digital ground; DSP part
8	VDDD2	–	Digital power supply; DSP part
9	TP2	I	Additional test pin 2; connected to ground for normal operation
10	NICAM	–	Not used
11	TP1	I	Additional test pin 1; connected to ground for normal operation
12	PCLK	–	Not used
13	ADDR1	–	Not used
14	Vtune	O	Tuning voltage output for crystal oscillator
15	XTALI	I	Crystal oscillator input
16	XTALO	O	Crystal oscillator output
17	TEST2	I	Test pin 2; connected to ground for normal operation
18	Iref	I	Resistor for reference current generation; front end circuitry
19	ADDR2	–	Not used
20	VSSA2	–	Analog ground; analog front end circuitry
21	VDDA2	–	Analog power supply; analog front end circuitry
22	TEST1	I	Test pin 1; connected to ground for normal operation
23	SIF2	I	Sound IF input 2
24	Vref1	I	Reference voltage; analog front end circuitry
25	SIF1	I	Sound IF input 1
26	CRST		Capacitor for power-on reset
27	VSSD3	–	Digital supply; front end circuitry
28	VDDD3	–	Digital supply; front end circuitry
29	SCL	I	Serial communication signal (IIC CLOCK)
30	SDA	I	Serial communication signal (IIC DATA)
31	SDO	–	Not used
32	WS	–	Not used
33	SCK	–	Not used
34	SYSCLK	–	Not used
35	VDDD4	–	Digital power supply; demodulator circuitry
36	VSSD4	–	Digital ground; demodulator circuitry
37	P1	–	Not used
38	MONOIN	–	Not used
39	EXTIR	I	External audio input right channel
40	EXTIL	I	External audio input left channel
41	Vref2	I	Analog reference voltage digital-to-analog converter and operational amplifiers
42	P2	–	Not used
43	VDDA3	–	Analog power supply; operational amplifiers
44	VSSA3	–	Analog ground; operational amplifiers

SECTION 6
ERROR CODES

This set displays an error code, and a mode code in case of error on the display tube, if the operation stopped by error.
The following provides description concerned.



A: Error code ..... Table 6-1
B: Mode code in case of error ..... Table 6-2

These codes are displayed at lower 5-digit positions of display tube.
In this case, " : " between digits is not displayed.

Table 6-1. Error Codes

Code	Description
0	NO ERROR
1	CAM ENCODER ERROR, LOAD DIRECTION
2	CAM ENCODER ERROR, UNLOAD DIRECTION
3	T REEL ERROR
4	S REEL ERROR
5	CAPSTAN ERROR
6	DRUM ERROR
7	INITIALIZE ERROR
8	CASSETTE UNLOADING ERROR
9	RESERVED

Table 6-2. Mode Codes in Case of Error

Code	Description
0	EJECT (POWER ON)
1	EJECT (POWER OFF)
2	UNLOAD STOP
3	STOP (POWER ON)
4	POWER OFF (CASSETTE IN)
5	F. FWD
6	REW
7	LOW SPEED F. FWD
8	LOW SPEED REW
9	STANDBY
10	REC
11	REC (VISS)
12	REC PAUSE
13	PLAY
14	A. DUB
15	A. DUB PAUSE
16	CUE
17	REV
18	STILL (MECHA FWD)
19	FWD FRAM BY FRAM (FWD SLOW)
20	STILL (MECHA RVS)
21	RVS FRAM BY FRAM (RVS SLOW)

SECTION 7
ADJUSTMENTS

During the adjustment, see the Parts Arrangement Diagram for Adjustments on Page 7-6.

7-1. MECHANICAL ADJUSTMENTS

Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENT VI.

7-2. ELECTRICAL ADJUSTMENTS

2-1. PRE-ADJUSTMENT PREPARATIONS

Necessary items and indications for total adjustment of electric circuit of this machine will be described in this chapter.

2-1-1. Instruments to be Used

1) Color TV
2) Oscilloscope 1 or 2 phenomena, band more than 30 MHz, delay mode, as provided.
3) NTSC pattern generator
4) Digital voltmeter
5) Audio level meter
6) Audio noise meter
7) Audio generator
8) Attenuator
9) Alignment tape
   Part Code: 8-192-605-32 KRV-51N2

2-1-2. Connection

Unless otherwise specified, connect and adjust the measuring instruments as shown in the following diagram.

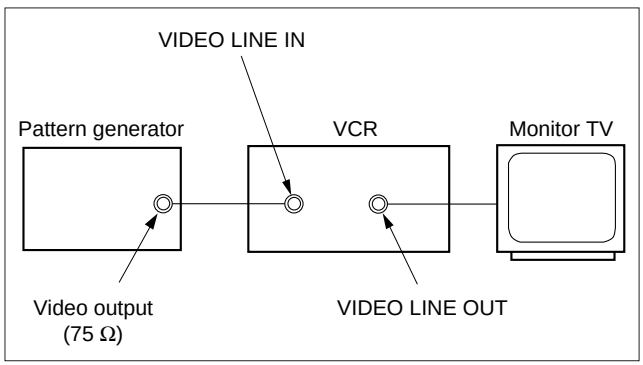


Fig. 7-2-1

2-1-3. Set-up of Adjustment

In this adjustment, NTSC pattern generator is connected with LINE input signal terminal. When check to tuner, connected AERIAL terminal. Check that the amplitudes of video signal SYNC signal, of picture portions, and of burst signals are flat at approximately 0.3, 0.7 and 0.3 V, respectively, and that the level ratio of the burst signal and "red" signal are 0.30: 0.66. Fig. 7-2-2. shows video signals (color bars) used in adjusting the video section.

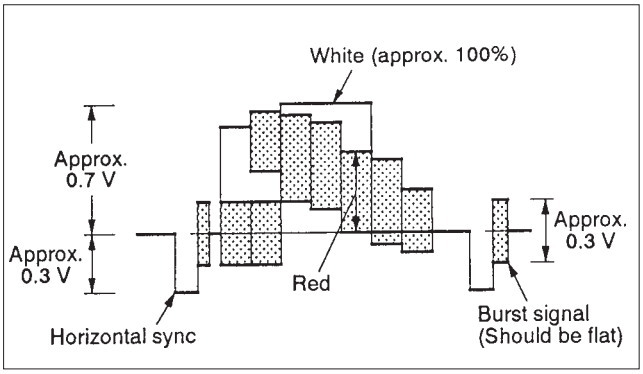


Fig. 7-2-2

2-1-4. Alignment Tapes [Alignment Tape (KRV-51N2)]

	Mode	Time	Video signal	Audio signal (HiFi/Normal)
1	SP	Seven minutes	Color bar	400 Hz
2	SP	Three minutes	Monoscope	
3	EP	Seven minutes	Color bar	
4	EP	Three minutes	Monoscope	

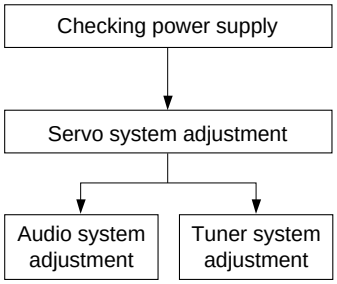
2-1-5. Specified I/O Level and Impedance

Input/output terminal

Video inputs	LINE IN : phono jack 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio inputs	LINE IN : phono jacks 47 kW, –7.5 dBs (0 dBs = 0.775 Vrms) More than 10 kW, –4 dBs
Video outputs	LINE OUT: phono jack 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio outputs	LINE OUT: phono jacks –7.5 dBs at load impedance 47 kΩ Output impedance : less than 10 Ω

2-1-6. Adjusting Sequence

Make the electrical adjustment in the following sequence.



2-2. POWER SUPPLY ADJUSTMENT

2-2-1. Power Supply Check (HS-921SF/921SF1 BOARD, SR-708 BOARD)

Mode	E-E
Measuring Instrument	Digital voltmeter
–10 V check	
Measurement Point	Pin ⑨ of CN600
Specified Value	–10.3 ±0.8 V
+6 V check	
Measurement Point	Pin ⑦, ⑧ of CN600
Specified Value	5.9 ± 0.2 V
+13 V check	
Measurement Point	Pin ②, ③ of CN600
Specified Value	13.3 ± 0.5 V
+35 V check	
Measurement Point	Pin ① of CN600
Specified Value	38.0 ± 3.0 V

Checking Method:

1) Confirm that each voltage meets its specified value.

2-2-2. +6 V Adjustment (HS-921SF/921SF1 BOARD, SR-708 BOARD)

Mode	REC or PB
Measuring Instrument	Digital voltmeter
Measurement Point	Pin ⑦, ⑧ of CN201
Adjusting Element	RV201
Specified Value	5.9 ± 0.2 V

2-3. SERVO SYSTEM Adjustment

2-3-1. RF Switching Position Adjustment (MA-323 Board)

Purpose:

Adjust the interval between A ch and B ch of tape playback output.

Improve the interchangeability with other tapes and sets.

When it is out of order, the interval appears on the screen, the screen is disturbed.

Mode	PB
Signal	Alignment tape SP mode color bar
Measurement Point	CH1: VIDEO LINE OUT CH2: Pin ② of CN501 (RF SWP)
Measuring Instrument	Oscilloscope
Specified Value	6.5 ± 0.5 H (410 ± 32 µsec)

Adjusting Method:

1) Connect MA-323 board JS140 to the GND for about 1 secont to activate the RF switching position adjustment mode.
2) Check appear “A P” on FL display.
3) Using the channel + and – buttons, adjust to 6.5 ± 0.5 H.
4) Press the pause button.

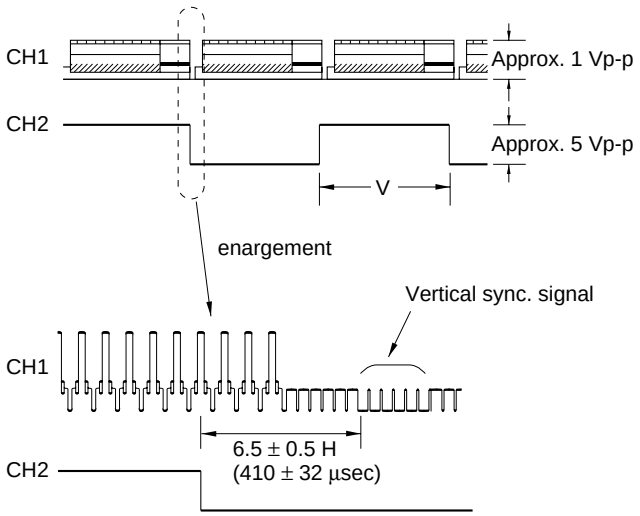


Fig. 7-2-3.

2-4. AUDIO SYSTEM ADJUSTMENTS

• Adjust both Lch and Rch.

[Connection]

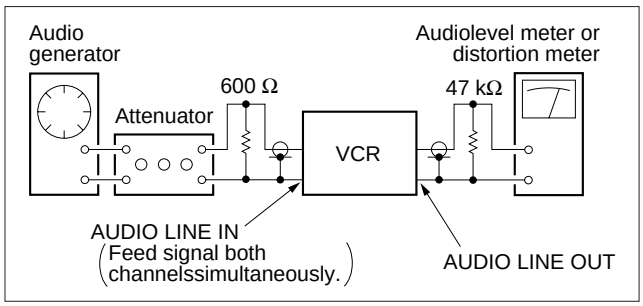


Fig. 7-2-4.

2-4-1. Hi-Fi Audio System Adjustment (SLV-ED7/ED8)

• Set switches and knobs to the following positions to make adjustment unless otherwise specified.
INPUT SELECT switch ..... LINE
AUDIO MONITOR ..... STEREO

[Adjustment Sequence]

1. **AF Switching Position Adjustment**
2. **Frequency Responce Check**
3. **Overall Level Characteristic and Distortion Factor Check**
4. **Overall S/N Check**

1. AF Switching Position Adjustment (MA-323 Board)

Purpose:

Adjust the interval between A CH and B CH of tape playback output. Improve the interchangeability with other tapes and sets. When it is out of order, noisy sound is increased and big noise is heard.

Mode	PB
Signal	Alignment tape SP mode color bar
Measurement point	CH1: Pin ② of CN501 CH2: Pin ① of CN341
Measuring Instrument	Oscilloscope
Specified Value	Fig. 7-2-5

Adjusting Method:

1) Connect MA-323 board JS140 to the GND for about 1 secont to activate the RF switching position adjustment mode.
2) Press the record button to activate the AF switching position adjustment mode.
3) Check appear “A H” on FL display.
4) Using the channels + and – buttons, minimize a chipped portion. At this time, confirm that a noisy sound is not heard.
5) Press the pause button.

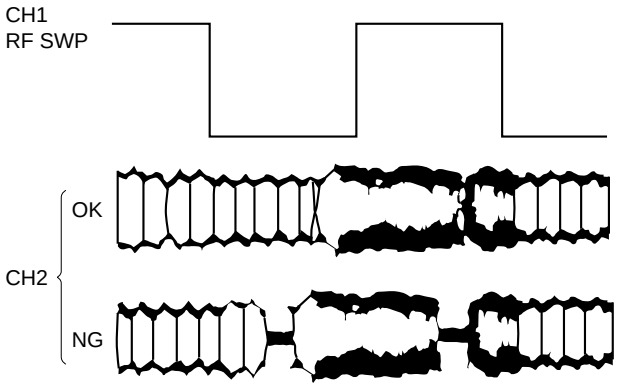


Fig. 7-2-5.

2. Frequency Responce Check

Purpose:

Confirm that the frequency characteristic is within the specification.

Mode	REC and PB (SP mode)
Signal	400 Hz, –7.5 dBs 20 Hz, –7.5 dBs 20 kHz, –7.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter
Specified value	0 ± 2 dB

Note: Tape path adjustment must have been completed.

Confirmation Method:

1) Supply a signal of 400 Hz, –7.5 dBs to both L and R channels of Audio Line Input.
2) Connect the audio level meter to the Audio Line Output.
3) Adjust the attenuator so that the audio level meter will indicate –7.5 dBs.
4) Make recording.
5) Set an audio line input signal to 20 Hz and make recording.
6) Set an audio line input signal to 20 kHz and make recording.
7) Playback a recorded portion, and measure output levels at 400 Hz and 20 Hz and 20 kHz.
8) Confirm that the 20 Hz and 20 kHz playback output level within a range of the 400 Hz playback output level 0 ± 2 dB.

3. Overall Level Characteristic and Distortion Factor Check

Purpose:
Check the record level, play level, and distortion factor against the reference input.

Mode	REC and PB (SP mode)
Signal	400 Hz, –7.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter and distortion factor meter
Specified value	Playback level: –7.5 ± 2 dBs Distortion factor: 1% or less

Confirmation Method:
1) Supply an audio signal of 400 Hz, –7.5 dBs simultaneously to both L and R channels of Audio Line Input.
2) Make recording
3) Play back a recorded portion.
4) Confirm that a playback level is –7.5 ±2 dBs.
5) Confirm that a distortion factor is within 1%.

4. Overall S/N Check

Purpose:
Confirm that the S/N is within the specification.

Mode	REC and PB (SP mode)
Signal	Short
Measurement point	Audio output terminal
Measurement equipment	Audio noise meter
Specified value	–67.5 dBs or less

Confirmation Method:
1) Connect both L and R channels of audio line input to the GND.
2) Start recording.
3) Play the recorded part to confirm that the noise is below –67.5 dBs.

2-4-2. Normal Audio System Adjustment

- Make adjustment in the SP mode, unless otherwise specified. Use a normal VHS cassette for an adjustment tape.
- Set AUDIO MONITOR to normal. (ED7/ED8)

[Adjustment Sequence]
1. **ACE Head Adjustment**
2. **E-E Output Level Check**
3. **Frequency Responce Check**
4. **Overall Level Characteristic and Distortion Factor Check**
5. **Overall S/N Check**

1. ACE Head Adjustment

Refer to the service manual of VHS MECHANICAL ADJUSTMENT VI.

2. E-E Output Level Check

Purpose:
Confirm that the output level against the reference input is within the specification.

Mode	E-E
Signal	L, R: 400 Hz, –7.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter
Specified value	–7.5 ± 3 dBs

Confirmation Method:
1) Simultaneously input a signal of 400 Hz, –7.5 dBs to both L and R channels of Audio Line Input.
2) Confirm that the audio output level is –7.5 ± 3 dBs.

3. Frequency Responce Check

Purpose:
Confirm that the frequency characteristic is within the specification.

Mode	REC and PB (SP mode)
Signal	400 Hz, –30.0 dBs 7 kHz, –30.0 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter
Specified value	1 ± 4 dB

Tape path adjustment must have been completed.

Confirmation Method:
1) Supply a signal of 400 Hz, –30.0 dBs to both L and R channels of Audio Line Input.
2) Connect the audio level meter to the Audio Line Output.
3) Adjust the attenuator so that the audio level meter will indicate –30.0 dBs.
4) Make recording in the SP mode.
5) Set an audio line input signal to 7 kHz and make recording.
6) Playback a recorded portion, and measure output levels at 400 Hz and 7 kHz.
7) Confirm that the 7 kHz playback output level within a range of the 400 Hz playback output level 1 ± 4 dB.

4. Overall Level Characteristic and Distortion Factor Check

Purpose:
Check the record level, play level, and distortion factor against the reference input.

Mode	REC and PB (SP mode)
Signal	400 Hz, –7.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter and distortion factor meter
Specified value	Playback level: –7.5 ± 4 dBs Distortion factor: 4% or less

Confirmation Method:
1) Supply an audio signal of 400 Hz, –7.5 dBs simultaneously to both L and R channels of Audio Line Input.
2) Make recording
3) Play back a recorded portion.
4) Confirm that a playback level is –7.5 ± 4 dBs.
5) Confirm that a distortion factor is within 4%.

5. Overall S/N Check

Purpose:
Confirm that the S/N is within the specification.

Mode	REC and PB (SP mode)
Signal	Short
Measurement point	Audio output terminal
Measurement equipment	Audio noise meter
Specified value	–46.0 dBs or less

Confirmation Method:
1) Connect both L and R channels of audio line input to the GND.
2) Start recording.
3) Play the recorded part to confirm that the noise is below –46.0 dBs.

2-5. TUNER SYSTEM ADJUSTMENT

[Connection]

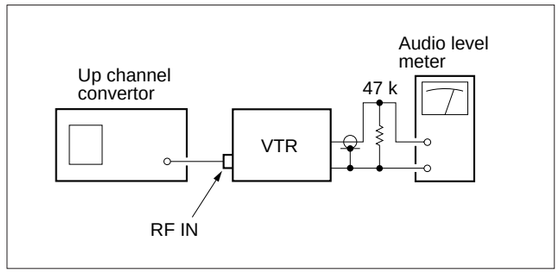


Fig. 7-2-6

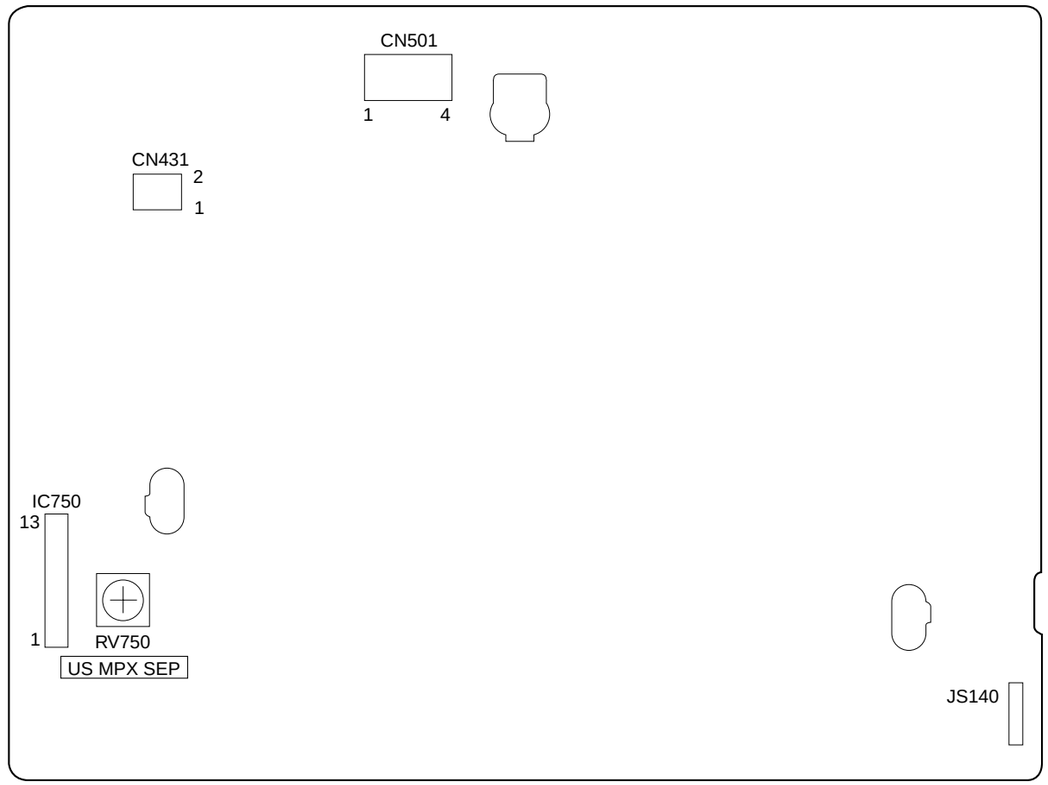
2-5-1. Separation Adjustment (SLV-ED8)

Purpose:
Mixed audio signal separate Lch and Rch.

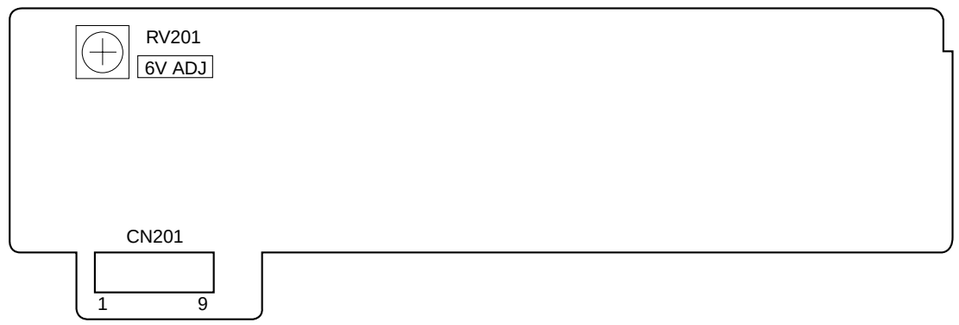
Mode	E-E
Signal	VIDEO: color bar (87.5% modulation) AUDIO: L 1 kHz 100% modulation R no signal ELECTRIC FIELD: 60–80 dBs/75 W Tem
Measurement point	Pin ⑫ of IC750
Measurement equipment	Audio level meter
Adjusting Element	RV750
Specified value	–9.9 ± 0.2 dBm (700 ± 14 mVp-p)

2-6. PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENTS

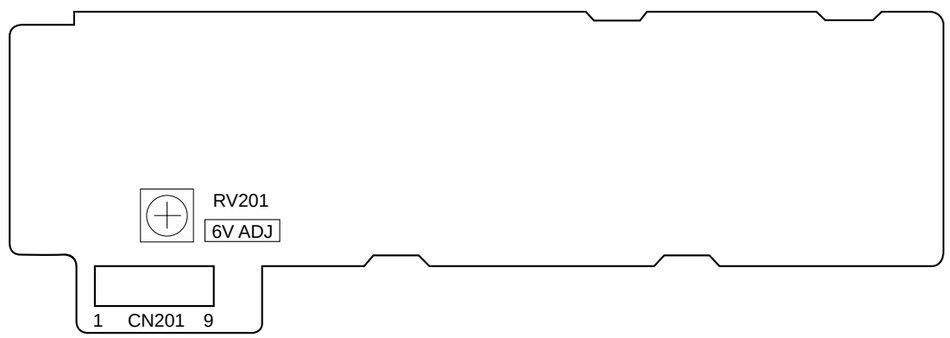
MA-323 BOARD (Side A)



HS-921SF/921SF1 BOARD (Side A)



SR-708 BOARD (Side A)



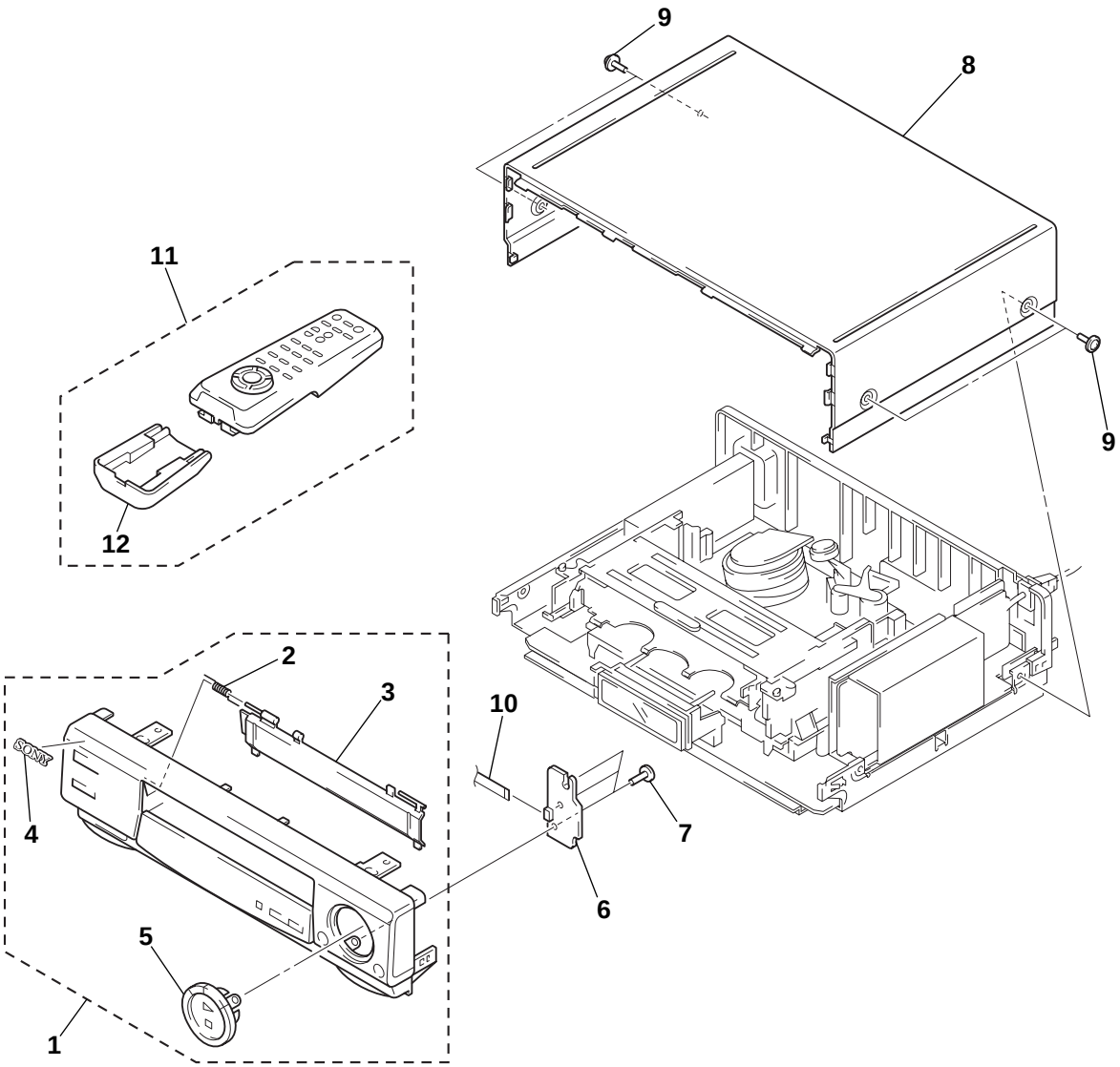
SECTION 8
REPAIR PARTS LIST

8-1. EXPLODED VIEWS

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

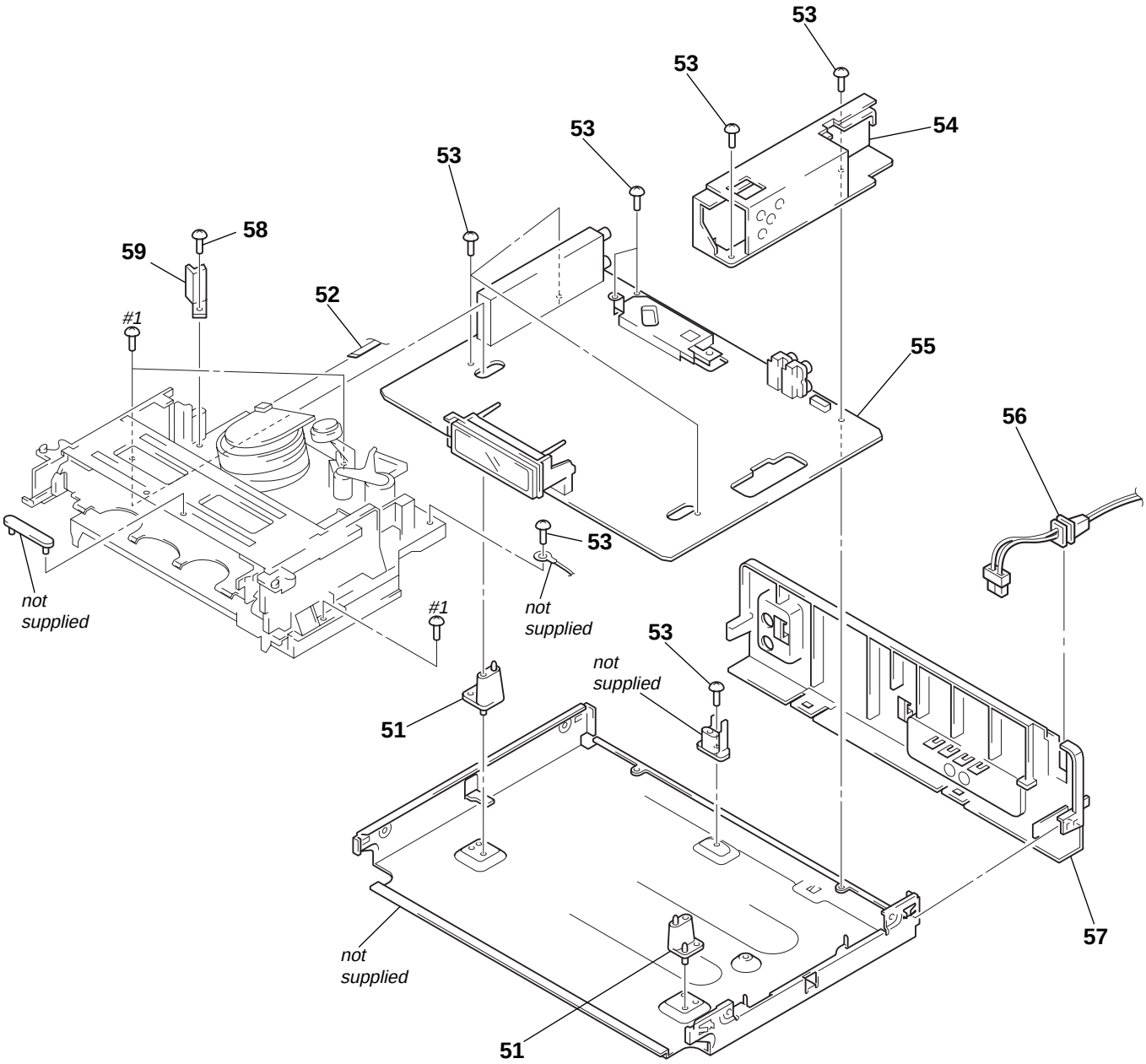
NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.

8-1-1. FRONT PANEL AND CABINET ASSEMBLIES (ED1)



Ref. No.	Part No.	Description	Remark
1	X-3948-470-1	PANEL ASSY, FRONT	
2	3-953-432-01	SPRING (GE), FL	
3	3-979-467-11	DOOR, CASSETTE	
4	3-943-995-01	EMBLEM (NO.5), SONY	
5	X-3946-598-1	BUTTON ASSY, FUNCTION	
* 6	A-6794-527-A	DS-80 MOUNT	
7	4-921-277-41	SCREW (B2.6X8), TAPPING, BIND	
* 8	3-988-080-51	CASE, UPPER	
9	3-710-901-11	SCREW, TAPPING	
10	1-783-567-11	CABLE, FLAT (FDS-4)	
11	1-475-613-11	COMMANDER, STANDARD (RMT-V248)	
12	3-709-322-01	COVER, BATTERY (for RMT-V248)	

8-1-2. CHASSIS ASSEMBLY (ED1)

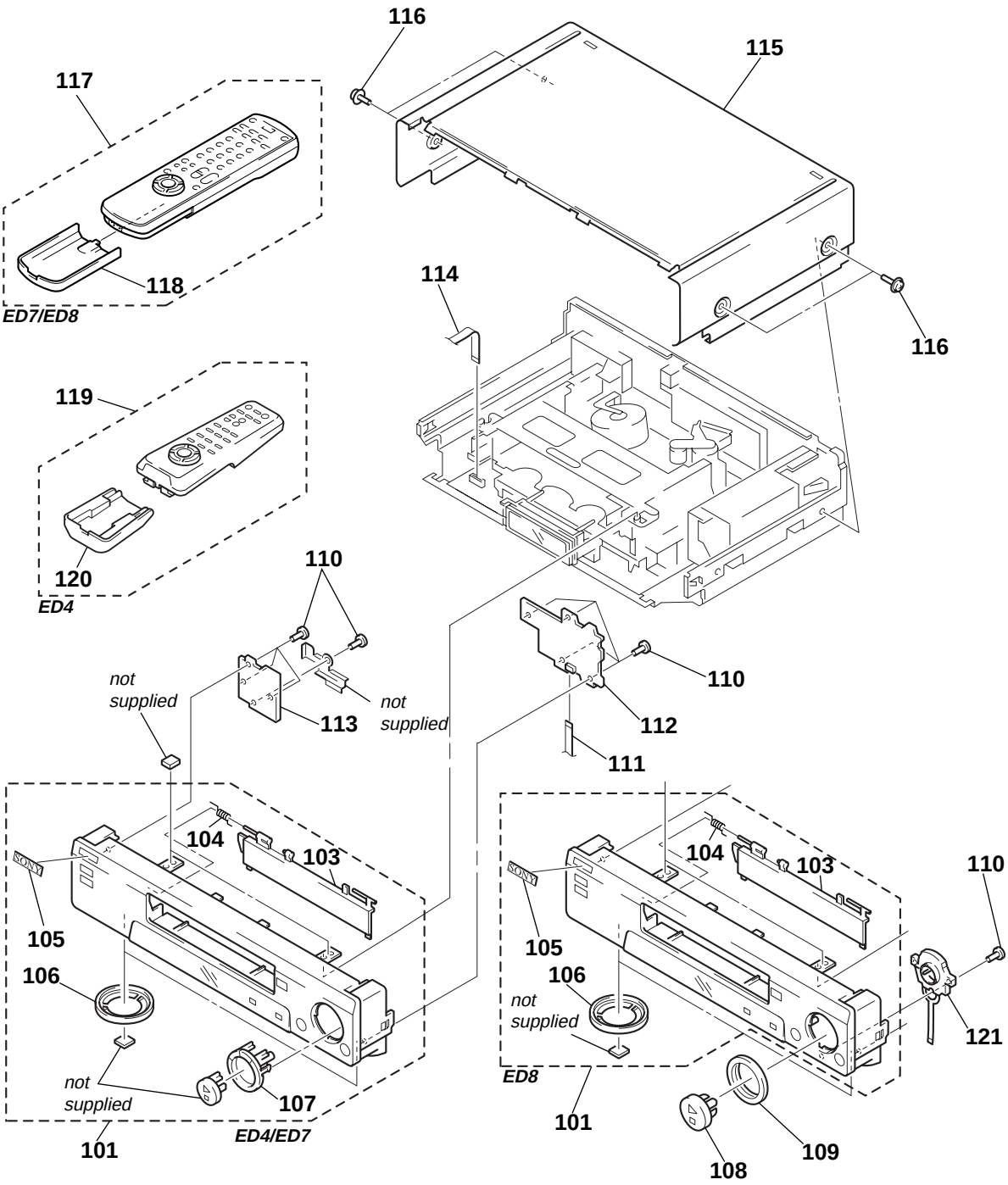


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
* 51	3-959-383-01	BASE (R), MD	
52	1-783-566-11	CABLE, FLAT (FMD-12)	
53	3-970-608-21	SUMITITE (B3), +BV	
* 54	1-468-312-11	POWER BLOCK (HS-921SF)	
* 55	A-6791-640-A	MA-323 BOARD, COMPLETE	

Ref. No.	Part No.	Description	Remark
⚠56	1-777-854-21	CORD, POWER	
* 57	3-051-393-01	PANEL (M), REAR	
58	3-979-112-01	SCREW SW (+) BVTP 3X10	
59	X-3947-568-1	TC (N17S) ASSY	

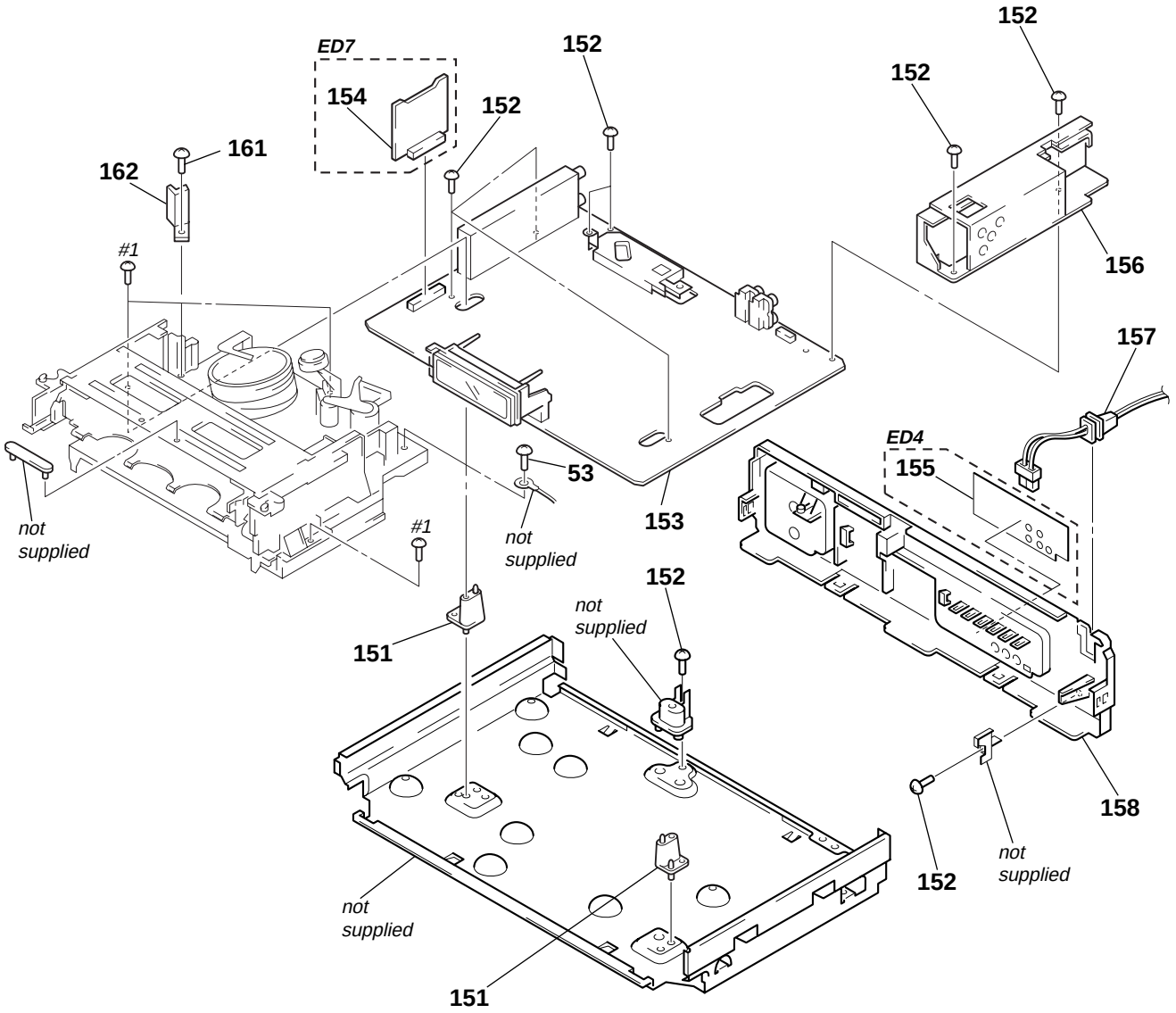
8-1-3. FRONT PANEL AND CABINET ASSEMBLIES (ED4/ED7/ED8)



Ref. No.	Part No.	Description	Remark
101	X-3948-409-1	PANEL ASSY, FRONT (ED8)	
101	X-3948-415-1	PANEL ASSY, FRONT (ED7)	
101	X-3948-418-1	PANEL ASSY, FRONT (ED4)	
103	3-987-899-01	DOOR, CASSETTE, (P)	
104	3-953-432-01	SPRING (GE), FL	
105	3-943-995-01	EMBLEM (NO.5), SONY	
* 106	3-977-160-01	INSULATOR	
107	3-987-816-01	RING, BUTTON (ED4/ED7)	
108	3-979-309-11	BUTTON (AV), CENTER (ED8)	
109	3-988-327-01	RING (M), JOG (ED8)	
110	4-921-277-41	SCREW (B2.6X8), TAPPING, BIND	
111	1-783-569-11	CABLE, FLAT (FDM-4)	

Ref. No.	Part No.	Description	Remark
* 112	A-6791-586-A	DM-76 BOARD, COMPLETE (ED8)	
* 112	A-6791-588-A	DM-76 BOARD, COMPLETE (ED4/ED7)	
* 113	A-6791-575-A	MF-312 BOARD, COMPLETE (ED4)	
* 113	A-6791-589-A	MF-312 BOARD, COMPLETE (ED7/ED8)	
114	1-783-568-11	CABLE, FLAT (FMF-23)	
115	3-710-901-11	SCREW, TAPPING	
* 116	3-977-136-21	CASE, UPPER	
117	1-475-616-31	COMMANDER, STANDARD (RMT-V247B) (ED7/ED8)	
118	3-709-133-11	COVER, BATTERY (for RMT-V247B) (ED7/ED8)	
119	1-475-613-11	COMMANDER, STANDARD (RMT-V248) (ED4)	
120	3-709-322-01	COVER, BATTERY (for RMT-V248) (ED4)	
121	1-762-844-21	SWITCH, ROTARY (ED8)	

8-1-4. CHASSIS ASSEMBLY (ED4/ED7/ED8)

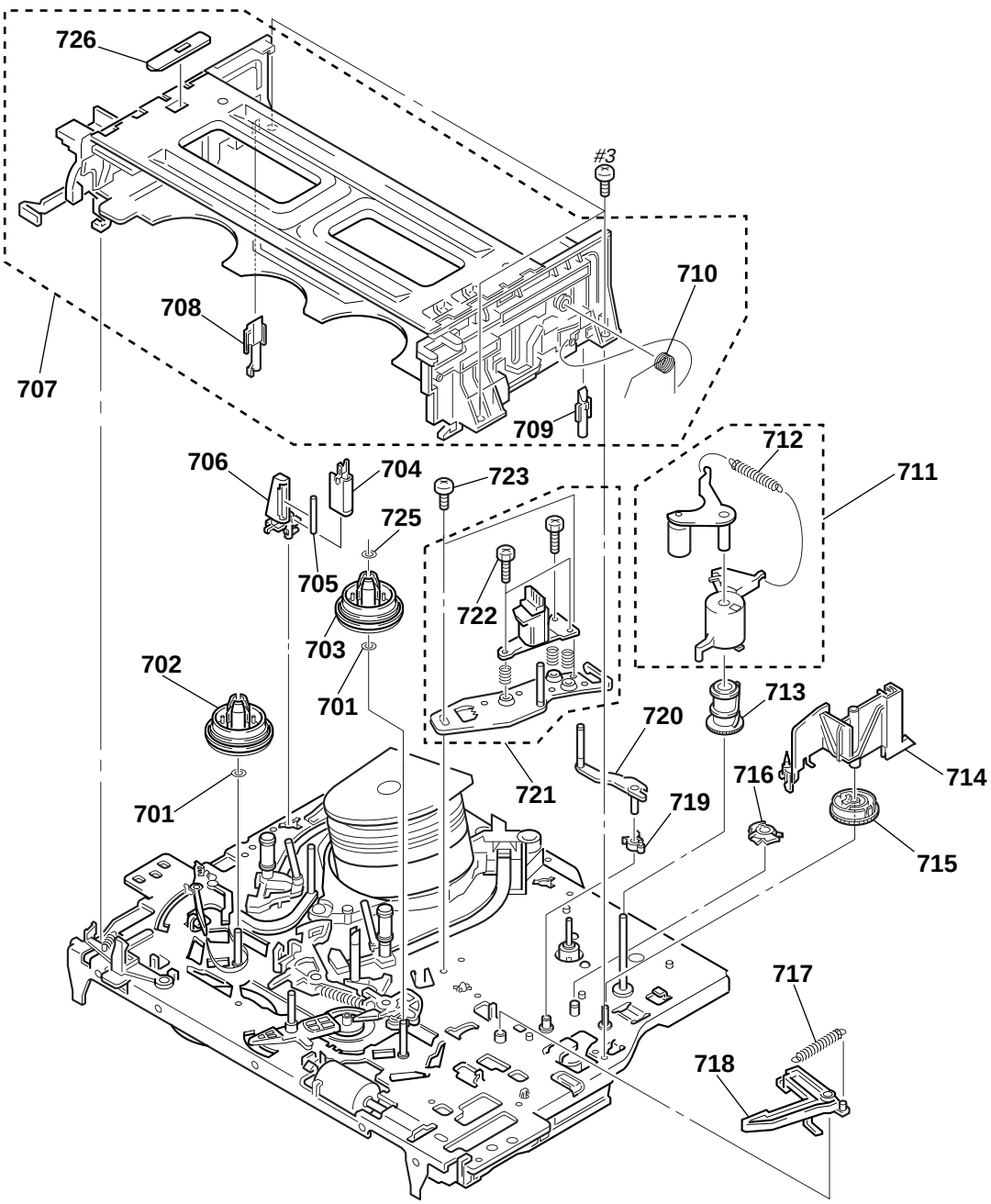


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
* 151	3-959-383-01	BASE (R), MD	
152	3-970-608-21	SUMITITE (B3), +BV	
* 153	A-6791-629-A	MA-323 BOARD, COMPLETE (ED8)	
* 153	A-6791-677-A	MA-323 BOARD, COMPLETE (ED7)	
* 153	A-6791-678-A	MA-323 BOARD, COMPLETE (ED4)	
* 154	A-6791-591-A	NK-11 BOARD, COMPLETE (ED7)	
155	3-987-912-51	PLATE, REAR JACK A (ED4)	

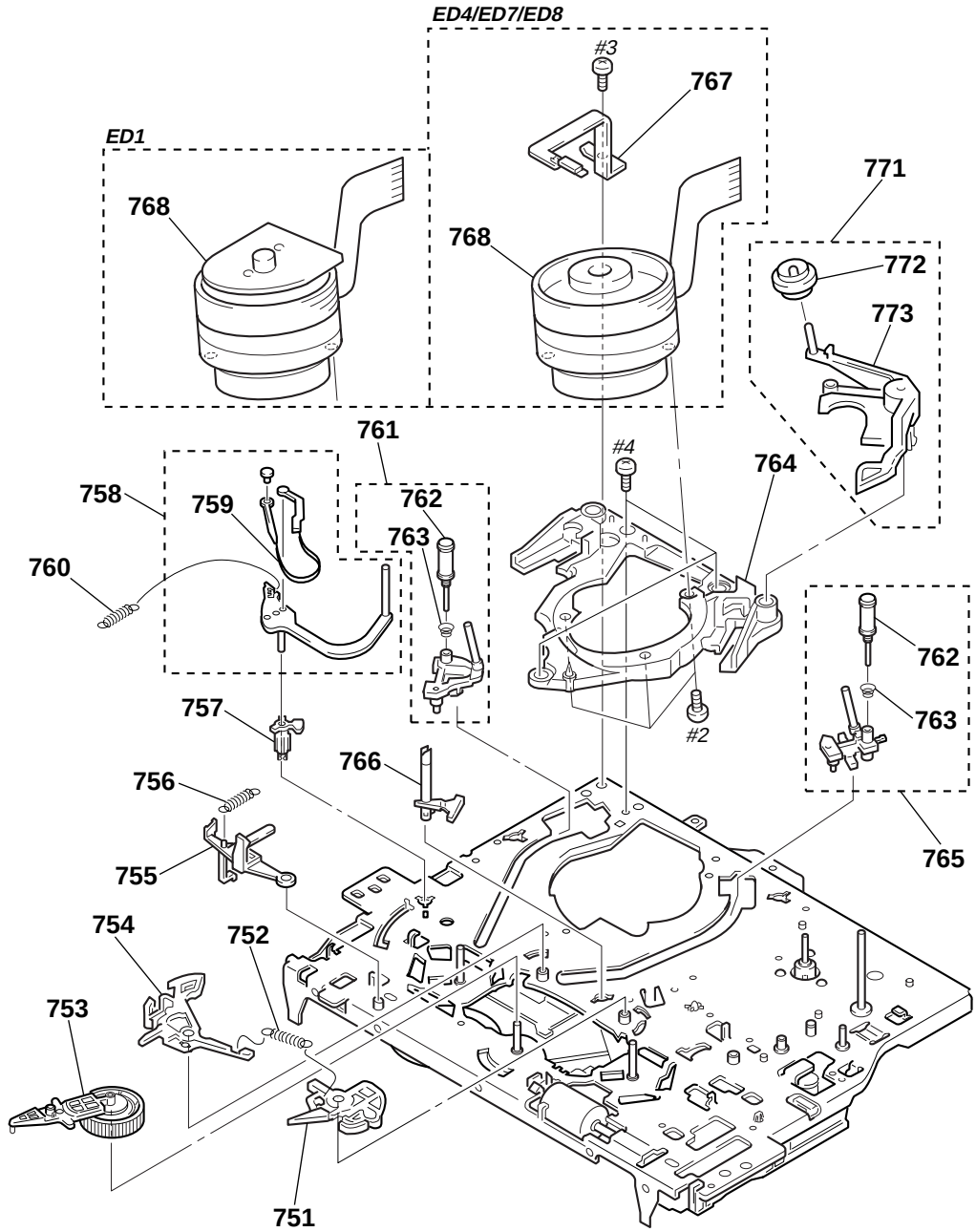
Ref. No.	Part No.	Description	Remark
156	1-468-311-21	POWER BLOCK (SR-708) (ED7/ED8)	
156	1-468-312-21	(HS-921SF1) (ED4)	
⚠157	1-777-857-22	CORD, POWER (ED4/ED8)	
⚠157	1-782-752-11	CORD, POWER (ED7)	
* 158	3-977-139-41	PANEL, REAR (ED7/ED8)	
* 158	3-977-139-71	PANEL, REAR (ED4)	
161	3-979-112-01	SCREW SW (+) BVTP 3X10	
162	X-3947-568-1	TC (N17S) ASSY	

8-1-5. MECHANISM CHASSIS ASSEMBLY (1)



Ref. No.	Part No.	Description	Remark
701	3-977-509-01	WASHER, THRUST	
702	3-977-507-01	TABLE, REEL (S)	
703	3-977-508-01	TABLE, REEL (T)	
704	1-500-144-11	HEAD, FE	
705	3-977-495-01	SHAFT TG2	
706	3-977-494-01	HOLDER, FEH	
707	A-6759-619-B	FL ASSY BOARD, COMPLETE	
708	3-977-535-01	PLATE, LUMINOUS (END SENSOR)	
709	3-977-536-01	PLATE, LUMINOUS (TOP SENSOR)	
710	3-970-471-01	SPRING (DECK OPEN), TORSION	
711	A-6759-615-A	PRESS BLOCK ASSY, PINCH	
712	3-958-455-01	SPRING (PINCH), TENSION	
713	3-977-447-01	GEAR, ELEVATOR	
714	3-977-514-01	OPENER, LID	
715	3-977-441-01	GEAR, PINCH PRESSING	
716	3-977-445-01	GEAR, TG8 ARM DRIVING	
717	3-977-465-01	SPRING, EXTENSION (RVS BRAKE)	
718	X-3947-582-1	ARM ASSY, RVS BRAKE	
719	3-977-446-01	GEAR, TG8 ARM	
720	X-3947-590-1	TG8 ASSY	
721	A-6759-620-A	HEAD BLOCK ASSY, ACE (TDK)	
722	3-974-556-01	+ HEXA TT 2.6X9 (TAPER)	
723	3-979-508-01	SCREW +HEXA TP SW 3X8	
725	3-977-443-01	WASHER, STOPPER	
726	3-987-560-02	PLATE, TOP, FL	

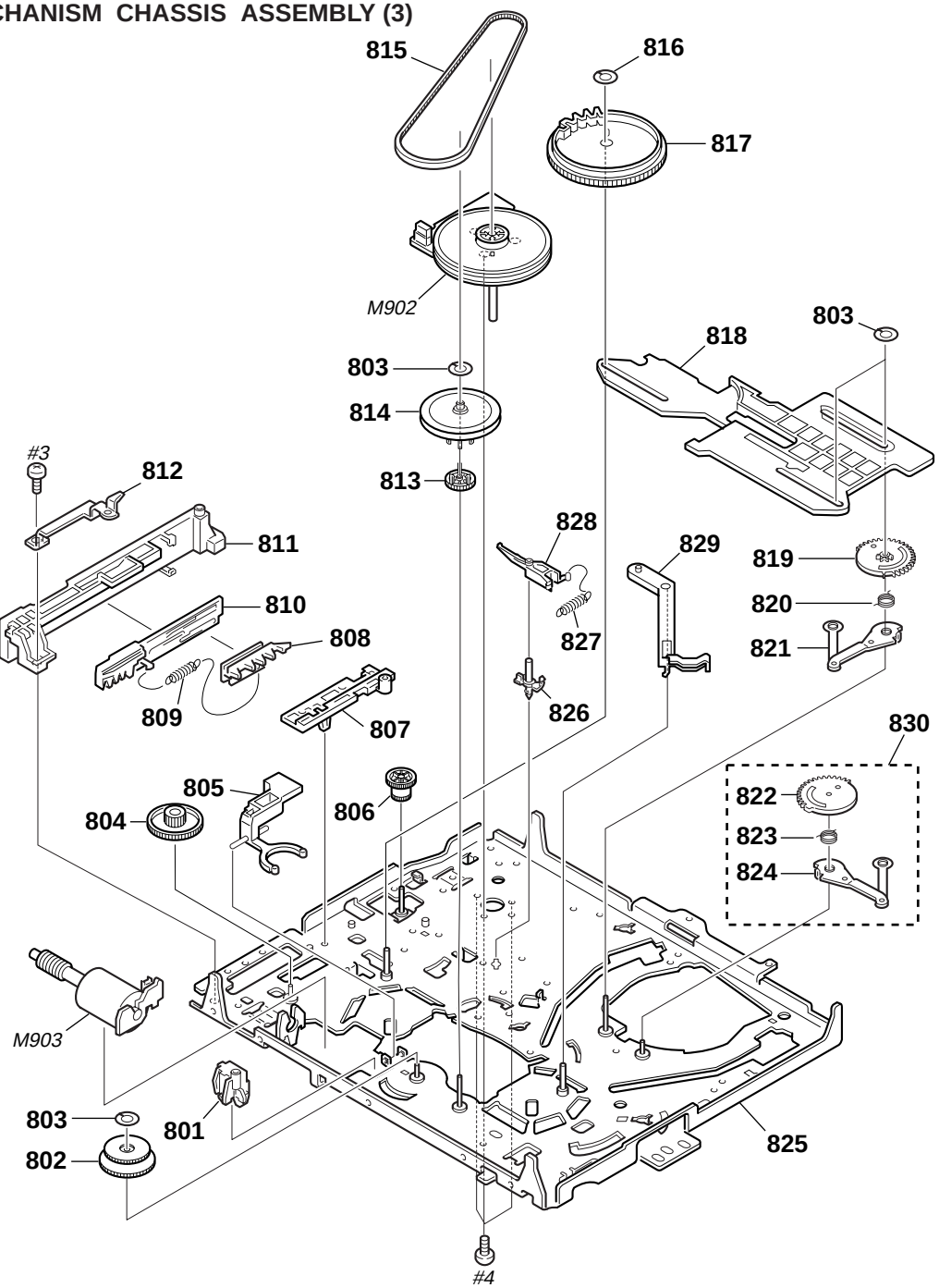
8-1-6. MECHANISM CHASSIS ASSEMBLY (2)



Ref. No.	Part No.	Description	Remark
751	X-3947-581-1	BRAKE ASSY, MAIN (T)	
752	3-977-462-01	SPRING, EXTENTION. (MAIN BRAKE)	
753	X-3947-573-1	ARM ASSY, PENDULUM	
754	X-3947-580-2	BRAKE ASSY, MAIN (S)	
755	3-977-513-02	LEVER, REC. PROOF	
756	3-976-767-01	SPRING, TENS. (REC. PROOF)	
757	3-977-487-01	BOSS, TG1 FULCRUM	
758	X-3947-587-1	TG1 ASSY	
759	X-3947-589-1	BAND ASSY, TG1	
760	3-977-488-01	SPRING (POWER TENSION)	
761	A-6750-324-A	SHUTTLE (S) BLOCK ASSY	
762	X-3944-378-1	ROLLER ASSY, GUIDE	

Ref. No.	Part No.	Description	Remark
763	3-965-178-01	SPRING	
764	3-969-632-04	BASE, DRUM	
765	A-6750-328-E	SHUTTLE (T) BLOCK ASSY	
766	3-977-501-01	PLATE, LUMINOUS	
767	X-3943-899-8	GROUND ASSY, SHAFT (ED4/ED7/ED8)	
768	1-759-455-11	DRUM ASSY, DZH-71D-R (ED1)	
768	8-839-044-02	DRUM ASSY, DZH-94A/ZRP-R (ED7/ED8)	
768	8-839-036-04	DRUM ASSY, DZH-93D/Z-RP (ED4)	
771	A-6746-074-G	ROLLER BLOCK ASSY, HC	
772	X-3947-255-1	ROLLER ASSY, HC	
773	3-975-724-07	ARM, HC	

8-1-7. MECHANISM CHASSIS ASSEMBLY (3)



Ref. No.	Part No.	Description	Remark
801	3-977-437-01	RETAINER, CAM MOTOR	
802	X-3947-584-1	ASSY, REEL DIRECT	
803	3-977-443-01	WASHER, STOPPER	
804	3-977-438-01	WORM - WHEEL	
805	3-977-506-01	ARM, LIMITTER SELECTION	
806	3-977-444-01	GEAR, PINCH TRANSMISSION	
807	3-977-515-01	GUIDE, FL SLIDER	
808	3-977-517-01	PLATE, SLIDE, FL	
809	3-977-519-01	SPRING, TENS. (LIMIT, FL)	
810	3-977-518-02	PLATE, LIMITTER, FL	
811	3-977-516-01	HOLDER, FL SLIDER	
812	3-977-877-01	PLATE, RETAINER	
813	3-977-504-01	GEAR, CLUTCH	
814	X-3947-585-1	GEAR ASSY, PULLEY	
815	3-977-510-01	BELT, RUBBER	
816	3-977-440-01	WASHER, STOPPER	

Ref. No.	Part No.	Description	Remark
817	3-977-439-01	GEAR, CAM	
818	3-977-442-01	SLIDER	
819	3-977-455-01	GEAR, LOADING (T)	
820	3-977-456-03	SPRING, TORSION (LOAD T)	
821	X-3947-579-1	LEVER ASSY, LOADING (T)	
822	3-977-451-01	GEAR, LOADING (S)	
823	3-977-452-01	SPRING, TORSION (LOAD S)	
824	X-3947-578-1	LEVER ASSY, LOADING (S)	
825	X-3947-576-2	CHASSIS ASSY, MECHANICAL	
826	3-977-468-01	SHAFT, CAPSTAN BRAKE	
827	3-977-467-02	SPRING, CAP BRAKE	
828	X-3947-583-1	BRAKE ASSY, CAPSTAN	
829	3-977-489-01	ARM, TG1 DRIVING	
830	A-6759-616-A	GEAR BLOCK ASSY, LOADING (S)	
M902	1-698-971-11	MOTOR, DC (CAPSTAN)	
M903	X-3947-577-1	MOTOR ASSY, CAM	

8-2. ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-6791-586-A	DM-76 BOARD, COMPLETE (ED8)			
*	A-6791-588-A	DM-76 BOARD, COMPLETE (ED4/ED7)			
		**********			
					(Ref.No.1,000 Series)
		< CONNECTOR >			
CN451	1-774-471-41	CONNECTOR, FFC/FPC 5P (ED8)			
CN452	1-691-066-21	HOUSING, CONNECTOR 7P			
		< RESISTOR >			
R442	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R443	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R444	1-216-295-00	METAL CHIP	0	5%	1/10W
R445	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R446	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R447	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
		< SWITCH >			
S441	1-762-196-21	SWITCH, TACTILE (EJECT)			
S442	1-762-196-21	SWITCH, TACTILE (REW) (ED8)			
S443	1-762-196-21	SWITCH, TACTILE (FF) (ED8)			
S444	1-762-196-21	SWITCH, TACTILE (PAUSE)			
S445	1-762-196-21	SWITCH, TACTILE (REC)			
S447	1-762-196-21	SWITCH, TACTILE (REW) (ED4/ED7)			
S448	1-762-196-21	SWITCH, TACTILE (FF) (ED4/ED7)			
S449	1-762-196-21	SWITCH, TACTILE (STOP) (ED4/ED7)			
S450	1-762-196-21	SWITCH, TACTILE (PLAY) (ED4/ED7)			
*	A-6794-527-A	DS-80 BOARD, COMPLETE (ED1)			
		**********			
					(Ref.No.2,000 Series)
		< CONNECTOR >			
CN452	1-691-066-21	HOUSING, CONNECTOR 7P			
		< RESISTOR >			
R451	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R452	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R453	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
		< SWITCH >			
S450	1-571-977-11	SWITCH, TACTILE (FF)			
S452	1-571-977-11	SWITCH, TACTILE (PLAY)			
S453	1-571-977-11	SWITCH, TACTILE (STOP)			
S455	1-571-977-11	SWITCH, TACTILE (REW)			
*	A-6791-629-A	MA-323 BOARD, COMPLETE (ED8)			
*	A-6791-677-A	MA-323 BOARD, COMPLETE (ED7)			
*	A-6791-678-A	MA-323 BOARD, COMPLETE (ED4)			
*	A-6791-640-A	MA-323 BOARD, COMPLETE (ED1)			
		**********			
					(Ref.No.2,000 Series)
*	3-960-273-01	SPACER, TOP END			
*	3-960-274-01	SPACER, LED			
*	3-966-865-01	BASE, INDICATION TUBE			
		< CAPACITOR >			
C100	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C101	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C102	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C103	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C104	1-128-057-11	ELECT	330uF	20%	6.3V
C106	1-124-589-11	ELECT	47uF	20%	16V
C108	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C109	1-124-589-11	ELECT	47uF	20%	16V
C111	1-124-589-11	ELECT	47uF	20%	16V (ED1)
C112	1-104-905-11	CAPACITOR	0.22F		5.5V
C113	1-163-253-11	CERAMIC CHIP	120PF	5%	50V
C114	1-124-248-00	ELECT	22uF	20%	35V
C115	1-126-157-11	ELECT	10uF	20%	16V
C116	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C117	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C119	1-163-133-00	CERAMIC CHIP	470PF	5%	50V (ED7/ED8)
C120	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C121	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C122	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C123	1-126-925-11	ELECT	470uF	20%	10V
C124	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C125	1-124-589-11	ELECT	47uF	20%	16V
C126	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C127	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V (ED1)
C128	1-117-720-11	CERAMIC CHIP	4.7uF		10V

Ref. No.	Part No.	Description			Remark
C129	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C131	1-128-499-11	ELECT	220uF	20%	16V
C133	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C134	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C136	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C137	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C138	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C139	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C142	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C171	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C172	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C173	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C174	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C175	1-163-102-00	CERAMIC CHIP	24PF	5%	50V
C176	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C177	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C178	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C180	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C182	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C185	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C200	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C201	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C203	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C204	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C205	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C206	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C207	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C208	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C209	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C210	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C212	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C213	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C214	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C215	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C216	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C217	1-163-089-00	CERAMIC CHIP	6PF		50V
C218	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C219	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C220	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C221	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C222	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C223	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C224	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C225	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C226	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C227	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C228	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C229	1-163-089-00	CERAMIC CHIP	6PF		50V (ED4/ED7/ED8)
C230	1-163-229-11	CERAMIC CHIP	12PF	5%	50V (ED4/ED7/ED8)
C230	1-163-231-11	CERAMIC CHIP	15PF	5%	50V (ED1)
C231	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C232	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C233	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C234	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C235	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C236	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C237	1-126-157-11	ELECT	10uF	20%	16V
C238	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C239	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C240	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C241	1-126-157-11	ELECT	10uF	20%	16V
C242	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C243	1-126-157-11	ELECT	10uF	20%	16V
C244	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C245	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C246	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C248	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C249	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C250	1-126-157-11	ELECT	10uF	20%	16V
C251	1-126-157-11	ELECT	10uF	20%	16V
C252	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C253	1-163-263-11	CERAMIC CHIP	330PF	5%	50V
C254	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C256	1-163-249-11	CERAMIC CHIP	82PF	5%	50V (ED4/ED7/ED8)
C256	1-163-251-11	CERAMIC CHIP	100PF	5%	50V (ED1)
C257	1-163-087-00	CERAMIC CHIP	4PF		50V
C258	1-163-222-11	CERAMIC CHIP	5PF	0.25PF	50V
C259	1-164-232-11	CERAMIC CHIP	0.01uF		50V (ED7/ED8)
C261	1-164-232-11	CERAMIC CHIP	0.01uF		50V (ED7/ED8)
C262	1-163-263-11	CERAMIC CHIP	330PF	5%	50V
C263	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C264	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C265	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C266	1-117-720-11	CERAMIC CHIP	4.7uF		10V (ED7/ED8)
C302	1-126-157-11	ELECT	10uF	20%	16V
C304	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C305	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C306	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C307	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C308	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C309	1-126-157-11	ELECT	10uF	20%	16V
C310	1-126-157-11	ELECT	10uF	20%	16V
C311	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C312	1-137-370-11	FILM	0.01uF	5%	50V
C313	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C314	1-124-589-11	ELECT	47uF	20%	16V
C315	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C316	1-126-160-11	ELECT	1uF	20%	50V
C318	1-126-163-11	ELECT	4.7uF	20%	50V
C319	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C321	1-124-248-00	ELECT	22uF	20%	35V
C322	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C323	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C324	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C325	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C331	1-104-697-11	FILM	0.047uF	5%	100V (ED7/ED8)
C332	1-164-232-11	CERAMIC CHIP	0.01uF		50V (ED7/ED8)
C333	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V (ED7/ED8)

Ref. No.	Part No.	Description			Remark
C335	1-126-933-11	ELECT	100uF	20%	16V (ED7/ED8)
C336	1-124-589-11	ELECT	47uF	20%	16V
C337	1-137-612-11	FILM	0.0068uF	5%	100V (ED7/ED8)
C337	1-104-696-11	FILM	0.015uF	5%	100V (ED1/ED4)
C338	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C339	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C340	1-164-232-11	CERAMIC CHIP	0.01uF		50V (ED7/ED8)
C342	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (ED7/ED8)
C346	1-117-720-11	CERAMIC CHIP	4.7uF		10V (ED7/ED8)
C350	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (ED7/ED8)
C352	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (ED7/ED8)
C353	1-163-038-00	CERAMIC CHIP	0.1uF		25V (ED7/ED8)
C357	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (ED7/ED8)
C358	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (ED7/ED8)
C359	1-164-232-11	CERAMIC CHIP	0.01uF		50V (ED7/ED8)
C361	1-109-982-11	CERAMIC CHIP	1uF	10%	10V (ED7/ED8)
C362	1-109-982-11	CERAMIC CHIP	1uF	10%	10V (ED7/ED8)
C363	1-216-296-00	METAL CHIP	0	5%	1/8W (ED7/ED8)
C364	1-216-296-00	METAL CHIP	0	5%	1/8W (ED7/ED8)
C365	1-135-091-00	TANTALUM CHIP	1uF	20%	16V (ED7/ED8)
C366	1-135-091-00	TANTALUM CHIP	1uF	20%	16V (ED7/ED8)
C369	1-104-913-11	TANTAL. CHIP	10uF	20%	16V (ED7/ED8)
C370	1-104-913-11	TANTAL. CHIP	10uF	20%	16V (ED7/ED8)
C371	1-135-091-00	TANTALUM CHIP	1uF	20%	16V (ED7/ED8)
C372	1-104-913-11	TANTAL. CHIP	10uF	20%	16V (ED7/ED8)
C373	1-104-913-11	TANTAL. CHIP	10uF	20%	16V (ED7/ED8)
C374	1-135-091-00	TANTALUM CHIP	1uF	20%	16V (ED7/ED8)
C375	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V (ED7/ED8)
C376	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V (ED7/ED8)
C377	1-124-589-11	ELECT	47uF	20%	16V (ED7/ED8)
C378	1-104-913-11	TANTAL. CHIP	10uF	20%	16V (ED7/ED8)
C379	1-135-179-21	TANTAL. CHIP	2.2uF	20%	16V (ED7/ED8)
C380	1-104-913-11	TANTAL. CHIP	10uF	20%	16V (ED7/ED8)
C381	1-124-589-11	ELECT	47uF	20%	16V (ED7/ED8)
C382	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V (ED7/ED8)
C383	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V (ED7/ED8)
C384	1-164-505-11	CERAMIC CHIP	2.2uF		16V (ED7/ED8)
C385	1-124-589-11	ELECT	47uF	20%	16V (ED7/ED8)
C386	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V (ED7/ED8)
C391	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V (ED7/ED8)
C400	1-164-232-11	CERAMIC CHIP	0.01uF		50V (ED1)
C401	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C402	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C403	1-126-163-11	ELECT	4.7uF	20%	50V
C404	1-126-157-11	ELECT	10uF	20%	16V
C405	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C406	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C407	1-126-163-11	ELECT	4.7uF	20%	50V
C408	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C409	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C411	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C412	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V
C417	1-124-589-11	ELECT	47uF	20%	16V
C419	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C421	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C422	1-124-589-11	ELECT	47uF	20%	16V
C423	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C424	1-124-589-11	ELECT	47uF	20%	16V
C501	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C504	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V (ED4/ED7/ED8)
C505	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C506	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C507	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C508	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C509	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C510	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C511	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C512	1-163-235-11	CERAMIC CHIP	22PF	5%	50V (ED4/ED7/ED8)
C512	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V (ED1)
C513	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C514	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V (ED4/ED7/ED8)
C515	1-163-235-11	CERAMIC CHIP	22PF	5%	50V (ED4/ED7/ED8)
C515	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V (ED1)
C516	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V (ED4/ED7/ED8)
C517	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V (ED4/ED7/ED8)

Ref. No.	Part No.	Description			Remark
C518	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C519	1-124-584-00	ELECT	100uF	20%	10V
C520	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C521	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C522	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C523	1-124-584-00	ELECT	100uF	20%	10V
C524	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C526	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C527	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C529	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C600	1-126-163-11	ELECT	4.7uF	20%	50V
C601	1-124-248-00	ELECT	22uF	20%	35V
C602	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C603	1-124-589-11	ELECT	47uF	20%	16V
C604	1-124-589-11	ELECT	47uF	20%	16V
C606	1-124-589-11	ELECT	47uF	20%	16V
C608	1-124-584-00	ELECT	100uF	20%	10V
C609	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C612	1-104-664-11	ELECT	47uF	20%	16V
C613	1-104-664-11	ELECT	47uF	20%	16V
C614	1-124-589-11	ELECT	47uF	20%	16V
C701	1-126-933-11	ELECT	100uF	20%	16V
C702	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C703	1-104-664-11	ELECT	47uF	20%	16V
C704	1-126-933-11	ELECT	100uF	20%	16V
C705	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C706	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C708	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (ED7/ED8)
C710	1-126-963-11	ELECT	4.7uF	20%	50V
C712	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C713	1-126-933-11	ELECT	100uF	20%	16V
C714	1-126-933-11	ELECT	100uF	20%	16V
C715	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C716	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C717	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C718	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C719	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C721	1-126-767-11	ELECT	1000uF	20%	16V
C752	1-109-982-11	CERAMIC CHIP	1uF	10%	10V (ED1/ED4/ED8)
C753	1-104-664-11	ELECT	47uF	20%	16V (ED7/ED8)
C756	1-126-964-11	ELECT	10uF	20%	50V (ED8)
C757	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V (ED1/ED4)
C758	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V (ED1/ED4)
C902	1-126-935-11	ELECT	470uF	20%	6.3V
C904	1-104-664-11	ELECT	47uF	20%	16V
C906	1-126-160-11	ELECT	1uF	20%	50V
C907	1-126-160-11	ELECT	1uF	20%	50V (ED7/ED8)
C908	1-126-160-11	ELECT	1uF	20%	50V
C909	1-126-160-11	ELECT	1uF	20%	50V (ED7/ED8)
C911	1-126-934-11	ELECT	220uF	20%	16V (ED7/ED8)
C911	1-124-589-11	ELECT	47uF	20%	16V (ED1/ED4)

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
* CN101	1-568-954-11	PIN, CONNECTOR 5P (ED4/ED7/ED8)	
CN102	1-779-723-11	CONNECTOR, BOARD TO BOARD 9P	
* CN103	1-766-716-11	CONNECTOR, BOARD TO BOARD 3P	
CN104	1-784-486-11	CONNECTOR, FFC/FPC 7P (ED1)	
CN105	1-784-484-11	CONNECTOR, FFC/FPC 5P (ED4/ED7/ED8)	
CN161	1-506-468-11	PIN, CONNECTOR 3P	
CN301	1-506-469-11	PIN, CONNECTOR 4P	
CN302	1-506-468-11	PIN, CONNECTOR 3P	
* CN341	1-560-890-00	PIN, CONNECTOR 2P (ED7/ED8)	
CN423	1-766-278-11	PIN, CONNECTOR (PC BOARD) 5P (ED7/ED8)	
CN424	1-784-486-11	CONNECTOR, FFC/FPC 7P	
* CN501	1-560-892-00	PIN, CONNECTOR 4P	
CN502	1-784-492-11	CONNECTOR, FFC/FPC 13P (ED7/ED8)	
CN502	1-563-585-11	CONNECTOR, FLEXIBLE 8P (ED1/ED4)	
* CN600	1-568-936-11	PIN, CONNECTOR 9P (ED4/ED7/ED8)	
CN600	1-784-946-11	CONNECTOR, BOARD TO BOARD 9P (ED1)	
CN751	1-691-170-11	PIN, CONNECTOR 13P (ED7)	
		< JACK >	
CNJ901	1-779-011-11	JACK, PIN 6P (LINE-1 IN/LINE OUT)	(ED7/ED8)
CNJ901	1-779-010-11	JACK, PIN 4P (LINE-1 IN/LINE OUT)	(ED1/ED4)
		< DIODE >	
D102	8-719-048-26	DIODE GL528V1	
D103	8-719-200-82	DIODE 11ES2	
D104	8-719-200-82	DIODE 11ES2	
D105	8-719-054-09	DIODE MPG5304S (POWER) (ED1)	
D106	8-719-911-19	DIODE 1SS119	
D130	8-719-200-82	DIODE 11ES2	
D163	8-719-200-82	DIODE 11ES2	
D164	8-719-200-82	DIODE 11ES2	
D165	8-719-200-82	DIODE 11ES2	
D305	8-719-109-93	DIODE RD6.2ES-B2	
D306	8-719-109-93	DIODE RD6.2ES-B2	
D307	8-719-109-93	DIODE RD6.2ES-B2	
D401	8-719-109-93	DIODE RD6.2ES-B2	
D402	8-719-911-19	DIODE 1SS119	
D403	8-719-911-19	DIODE 1SS119	
D600	8-719-911-19	DIODE 1SS119	
D601	8-719-911-19	DIODE 1SS119	
D602	8-719-109-84	DIODE RD5.1ES-B1	
D603	8-719-200-82	DIODE 11ES2	
D604	8-719-200-82	DIODE 11ES2	
D701	8-719-109-84	DIODE RD5.1ES-B1	
D702	8-719-911-19	DIODE 1SS119	
D704	8-719-150-92	DIODE RD33ES-T1B	
D908	8-719-109-93	DIODE RD6.2ES-B2	
D909	8-719-109-93	DIODE RD6.2ES-B2	
		< FERRITE BEAD >	
FB701	1-410-397-21	FERRITE BEAD INDUCTOR	
		< IC >	
IC130	8-759-481-46	IC LB1943	
IC161	8-759-532-55	IC HD6433977RA58F	
IC162	8-759-248-87	IC MM1256XF-BE	
IC163	8-759-432-32	IC ST24W02FM6TR	

Ref. No.	Part No.	Description			Remark
IC201	8-759-562-55	IC HA118503F			
IC202	8-759-479-53	IC MSM7470-76MS-KR1			
IC203	8-759-295-66	IC BA7653AF-E2 (ED7/ED8)			
IC340	8-759-486-92	IC LA7256 (ED7/ED8)			
IC360	8-759-486-64	IC TDA9615H/N1,557 (ED7/ED8)			
IC400	8-742-042-00	HYB IC SBX1986-51 (ED1)			
IC420	8-759-366-44	IC uPD16312GB-3B4			
IC501	8-759-352-17	IC HA118195NT (ED4/ED7/ED8)			
IC501	8-759-357-84	IC HA118295NT (ED1)			
IC600	8-759-438-18	IC PQ12RD08			
IC601	8-759-701-56	IC NJM78M05FA			
IC602	8-759-358-38	IC NJM78M05DLA(TE1)			
IC750	8-742-037-00	HYB IC SBX1837-51 (ED8)			
IC901	8-759-454-62	IC uPC4558G2-E2			
		< JUMPER RESISTOR >			
JR001	1-216-295-00	METAL CHIP	0	5%	1/10W
JR002	1-216-295-00	METAL CHIP	0	5%	1/10W
JR003	1-216-295-00	METAL CHIP	0	5%	1/10W
JR004	1-216-295-00	METAL CHIP	0	5%	1/10W
JR005	1-216-295-00	METAL CHIP	0	5%	1/10W
JR006	1-216-295-00	METAL CHIP	0	5%	1/10W
JR007	1-216-295-00	METAL CHIP	0	5%	1/10W
JR008	1-216-295-00	METAL CHIP	0	5%	1/10W
JR009	1-216-295-00	METAL CHIP	0	5%	1/10W
JR010	1-216-295-00	METAL CHIP	0	5%	1/10W
JR011	1-216-295-00	METAL CHIP	0	5%	1/10W
JR012	1-216-295-00	METAL CHIP	0	5%	1/10W
JR013	1-216-295-00	METAL CHIP	0	5%	1/10W
JR014	1-216-295-00	METAL CHIP	0	5%	1/10W
JR015	1-216-295-00	METAL CHIP	0	5%	1/10W
JR016	1-216-295-00	METAL CHIP	0	5%	1/10W
JR018	1-216-295-00	METAL CHIP	0	5%	1/10W
JR019	1-216-295-00	METAL CHIP	0	5%	1/10W
JR020	1-216-295-00	METAL CHIP	0	5%	1/10W
JR021	1-216-295-00	METAL CHIP	0	5%	1/10W
JR022	1-216-295-00	METAL CHIP	0	5%	1/10W
JR023	1-216-295-00	METAL CHIP	0	5%	1/10W
JR024	1-216-295-00	METAL CHIP	0	5%	1/10W
JR025	1-216-295-00	METAL CHIP	0	5%	1/10W
JR026	1-216-295-00	METAL CHIP	0	5%	1/10W
JR027	1-216-295-00	METAL CHIP	0	5%	1/10W
JR028	1-216-295-00	METAL CHIP	0	5%	1/10W
JR029	1-216-295-00	METAL CHIP	0	5%	1/10W
JR030	1-216-295-00	METAL CHIP	0	5%	1/10W
JR031	1-216-295-00	METAL CHIP	0	5%	1/10W
JR032	1-216-295-00	METAL CHIP	0	5%	1/10W
JR033	1-216-295-00	METAL CHIP	0	5%	1/10W
JR201	1-216-296-00	METAL CHIP	0	5%	1/8W
JR202	1-216-296-00	METAL CHIP	0	5%	1/8W
JR203	1-216-296-00	METAL CHIP	0	5%	1/8W
JR204	1-216-296-00	METAL CHIP	0	5%	1/8W
JR205	1-216-296-00	METAL CHIP	0	5%	1/8W
JR206	1-216-296-00	METAL CHIP	0	5%	1/8W
JR207	1-216-296-00	METAL CHIP	0	5%	1/8W
JR208	1-216-296-00	METAL CHIP	0	5%	1/8W
JR209	1-216-296-00	METAL CHIP	0	5%	1/8W
JR210	1-216-296-00	METAL CHIP	0	5%	1/8W
JR211	1-216-296-00	METAL CHIP	0	5%	1/8W
JR212	1-216-296-00	METAL CHIP	0	5%	1/8W

Ref. No.	Part No.	Description			Remark
JR213	1-216-296-00	METAL CHIP	0	5%	1/8W
JR214	1-216-296-00	METAL CHIP	0	5%	1/8W
JR215	1-216-296-00	METAL CHIP	0	5%	1/8W
JR216	1-216-296-00	METAL CHIP	0	5%	1/8W
JR217	1-216-296-00	METAL CHIP	0	5%	1/8W
JR218	1-216-296-00	METAL CHIP	0	5%	1/8W
JR219	1-216-296-00	METAL CHIP	0	5%	1/8W
JR220	1-216-296-00	METAL CHIP	0	5%	1/8W
JR221	1-216-296-00	METAL CHIP	0	5%	1/8W
JR222	1-216-296-00	METAL CHIP	0	5%	1/8W
JR223	1-216-296-00	METAL CHIP	0	5%	1/8W
JR224	1-216-296-00	METAL CHIP	0	5%	1/8W
JR225	1-216-296-00	METAL CHIP	0	5%	1/8W
JR226	1-216-296-00	METAL CHIP	0	5%	1/8W
JR227	1-216-296-00	METAL CHIP	0	5%	1/8W
JR228	1-216-296-00	METAL CHIP	0	5%	1/8W
JR229	1-216-296-00	METAL CHIP	0	5%	1/8W
JR230	1-216-296-00	METAL CHIP	0	5%	1/8W
JR231	1-216-296-00	METAL CHIP	0	5%	1/8W
JR232	1-216-296-00	METAL CHIP	0	5%	1/8W
JR233	1-216-296-00	METAL CHIP	0	5%	1/8W
JR234	1-216-296-00	METAL CHIP	0	5%	1/8W
JR235	1-216-296-00	METAL CHIP	0	5%	1/8W
JR236	1-216-296-00	METAL CHIP	0	5%	1/8W
JR237	1-216-296-00	METAL CHIP	0	5%	1/8W
JR238	1-216-296-00	METAL CHIP	0	5%	1/8W
JR239	1-216-296-00	METAL CHIP	0	5%	1/8W
JR240	1-216-296-00	METAL CHIP	0	5%	1/8W
JR241	1-216-296-00	METAL CHIP	0	5%	1/8W
JR242	1-216-296-00	METAL CHIP	0	5%	1/8W
JR243	1-216-296-00	METAL CHIP	0	5%	1/8W
JR244	1-216-296-00	METAL CHIP	0	5%	1/8W
JR245	1-216-296-00	METAL CHIP	0	5%	1/8W
JR246	1-216-296-00	METAL CHIP	0	5%	1/8W
JR247	1-216-296-00	METAL CHIP	0	5%	1/8W
JR248	1-216-296-00	METAL CHIP	0	5%	1/8W
JR249	1-216-296-00	METAL CHIP	0	5%	1/8W
JR250	1-216-296-00	METAL CHIP	0	5%	1/8W
JR251	1-216-296-00	METAL CHIP	0	5%	1/8W
JR252	1-216-296-00	METAL CHIP	0	5%	1/8W
JR253	1-216-296-00	METAL CHIP	0	5%	1/8W
JS104	1-216-295-00	METAL CHIP	0	5%	1/10W
JS107	1-216-295-00	METAL CHIP	0	5%	1/10W
JS108	1-216-295-00	METAL CHIP	0	5%	1/10W
JS109	1-216-296-00	METAL CHIP	0	5%	1/8W
JS201	1-216-295-00	METAL CHIP	0	5%	1/10W (ED1/ED4)
JS202	1-216-295-00	METAL CHIP	0	5%	1/10W
JS204	1-216-295-00	METAL CHIP	0	5%	1/10W
JS302	1-216-295-00	METAL CHIP	0	5%	1/10W (ED1/ED4)
JS304	1-216-295-00	METAL CHIP	0	5%	1/10W (ED7/ED8)
JS309	1-216-295-00	METAL CHIP	0	5%	1/10W
JS360	1-216-296-00	METAL CHIP	0	5%	1/8W (ED1/ED4)
JS364	1-216-296-00	METAL CHIP	0	5%	1/8W (ED1/ED4)
JS400	1-216-295-00	METAL CHIP	0	5%	1/10W
JS401	1-216-295-00	METAL CHIP	0	5%	1/10W

Ref. No.	Part No.	Description			Remark
JS404	1-216-295-00	METAL CHIP	0	5%	1/10W (ED4/ED7/ED8)
JS603	1-216-296-00	METAL CHIP	0	5%	1/8W
JS604	1-216-296-00	METAL CHIP	0	5%	1/8W
JS705	1-216-296-00	METAL CHIP	0	5%	1/8W
JS707	1-216-296-00	METAL CHIP	0	5%	1/8W
JS708	1-216-295-00	METAL CHIP	0	5%	1/10W (ED1/ED4/ED8)
JS709	1-216-296-00	METAL CHIP	0	5%	1/8W
JS713	1-216-295-00	METAL CHIP	0	5%	1/10W
JS716	1-216-296-00	METAL CHIP	0	5%	1/8W (ED7/ED8)
JS719	1-216-295-00	METAL CHIP	0	5%	1/10W (ED1/ED4)
JS752	1-216-295-00	METAL CHIP	0	5%	1/10W (ED8)
JS754	1-216-295-00	METAL CHIP	0	5%	1/10W (ED8)
JS756	1-216-075-00	METAL CHIP	12K	5%	1/10W (ED8)
JS756	1-216-295-00	METAL CHIP	0	5%	1/10W (ED7)
JS758	1-216-295-00	METAL CHIP	0	5%	1/10W (ED7)
JS759	1-216-295-00	METAL CHIP	0	5%	1/10W (ED7)
JS760	1-216-295-00	METAL CHIP	0	5%	1/10W (ED7)
JS763	1-216-295-00	METAL CHIP	0	5%	1/10W (ED7)
JS764	1-216-295-00	METAL CHIP	0	5%	1/10W (ED7)
JS900	1-216-295-00	METAL CHIP	0	5%	1/10W
JS912	8-719-911-19	DIODE 1SS119 (ED7/ED8)			
		< COIL >			
L164	1-410-513-11	INDUCTOR	22uH (ED1)		
L166	1-410-513-11	INDUCTOR	22uH		
L167	1-410-501-11	INDUCTOR	2.2uH		
L168	1-410-513-11	INDUCTOR	22uH		
L203	1-410-525-11	INDUCTOR	220uH		
L204	1-410-501-11	INDUCTOR	2.2uH		
L205	1-410-510-11	INDUCTOR	12uH		
L207	1-410-509-11	INDUCTOR	10uH		
L208	1-410-520-11	INDUCTOR	82uH		
L209	1-410-521-11	INDUCTOR	100uH		
L211	1-414-939-21	INDUCTOR	68uH		
L212	1-410-521-11	INDUCTOR	100uH		
L213	1-410-525-11	INDUCTOR	220uH		
L301	1-412-092-11	INDUCTOR	22mH		
L302	1-410-456-21	INDUCTOR	12mH		
L303	1-410-687-11	INDUCTOR	1.2mH		
L330	1-410-120-11	INDUCTOR	1.2mH (ED7/ED8)		
L341	1-414-940-21	INDUCTOR	100uH (ED7/ED8)		
L400	1-410-511-11	INDUCTOR	15uH		
L401	1-410-513-11	INDUCTOR	22uH		

Ref. No.	Part No.	Description		Remark
L501	1-414-940-21	INDUCTOR	100uH	
L502	1-414-940-21	INDUCTOR	100uH	
L600	1-414-938-21	INDUCTOR	47uH	
L601	1-410-509-11	INDUCTOR	10uH	
L602	1-410-513-11	INDUCTOR	22uH	
L701	1-410-501-11	INDUCTOR	2.2uH	
L703	1-410-501-11	INDUCTOR	2.2uH	
L704	1-410-501-11	INDUCTOR	2.2uH	
L706	1-414-938-21	INDUCTOR	47uH	
L751	1-410-509-11	INDUCTOR	10uH (ED7/ED8)	
		< FLUORECENT INDICATOR >		
ND420	1-517-734-11	TUBE, FLUORESCENT INDICATOR		
		< PHOTO INTERRUPTER >		
PH100	8-749-013-23	PHOTO INTERRUPTER GP3S120		
PH101	8-749-013-23	PHOTO INTERRUPTER GP3S120		
		< IC LINK >		
⚠PS100	1-533-586-31	LINK, IC 491.315 (0.315A)		
⚠PS301	1-533-586-31	LINK, IC 491.315 (0.315A)		
⚠PS600	1-533-593-11	LINK, IC 491002 (2A)		
⚠PS601	1-533-586-31	LINK, IC 491.315 (0.315A)		
		< TRANSISTOR >		
Q100	8-729-043-84	TRANSISTOR	PT380F3	
Q101	8-729-043-84	TRANSISTOR	PT380F3	
Q102	8-729-281-53	TRANSISTOR	2SC1815-GR	
Q103	8-729-010-29	TRANSISTOR	MSD601-RST1	
Q105	8-729-010-29	TRANSISTOR	MSD601-RST1 (ED7/ED8)	
Q201	8-729-421-19	TRANSISTOR	UN2213 (ED4/ED7/ED8)	
Q202	8-729-901-06	TRANSISTOR	DTA144EK	
Q204	8-729-421-19	TRANSISTOR	UN2213	
Q205	8-729-421-19	TRANSISTOR	UN2213	
Q207	8-729-421-19	TRANSISTOR	UN2213	
Q208	8-729-010-29	TRANSISTOR	MSD601-RST1	
Q209	8-729-010-29	TRANSISTOR	MSD601-RST1	
Q210	8-729-421-19	TRANSISTOR	UN2213	
Q301	8-729-010-29	TRANSISTOR	MSD601-RST1	
Q302	8-729-010-29	TRANSISTOR	MSD601-RST1	
Q303	8-729-901-06	TRANSISTOR	DTA144EK	
Q305	8-729-012-31	TRANSISTOR	2SC4040-TL2-Q	
Q307	8-729-900-51	TRANSISTOR	DTA114TK	
Q308	8-729-421-19	TRANSISTOR	UN2213	
Q311	8-729-421-19	TRANSISTOR	UN2213	
Q312	8-729-010-29	TRANSISTOR	MSD601-RST1	
Q330	8-729-012-31	TRANSISTOR	2SC4040-TL2-Q (ED7/ED8)	
Q331	8-729-900-51	TRANSISTOR	DTA114TK (ED7/ED8)	
Q332	8-729-010-29	TRANSISTOR	MSD601-RST1	
Q400	8-729-010-05	TRANSISTOR	MSB709-RT1	
Q402	8-729-421-22	TRANSISTOR	UN2211	
Q501	8-729-230-49	TRANSISTOR	2SC2712-G	
Q600	8-729-140-93	TRANSISTOR	2SB733-34	
Q601	8-729-421-22	TRANSISTOR	UN2211	
Q602	8-729-018-99	TRANSISTOR	2SD2394-F	
Q603	8-729-119-79	TRANSISTOR	2SC2785-FEK	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

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Ref. No.	Part No.	Description			Remark
Q701	8-729-106-68	TRANSISTOR	2SD1615A-GP		
Q703	8-729-010-29	TRANSISTOR	MSD601-RST1 (ED7)		
Q754	8-729-421-19	TRANSISTOR	UN2213 (ED8)		
Q901	8-729-010-05	TRANSISTOR	MSB709-RT1		
		< RESISTOR >			
R100	1-216-089-00	METAL CHIP	47K	5%	1/10W
R101	1-216-041-00	METAL CHIP	470	5%	1/10W
R102	1-249-437-11	CARBON	47K	5%	1/4W
R103	1-216-085-00	METAL CHIP	33K	5%	1/10W
R104	1-216-085-00	METAL CHIP	33K	5%	1/10W
R105	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R106	1-249-417-11	CARBON	1K	5%	1/4W F
R107	1-249-400-11	CARBON	39	5%	1/4W F
R108	1-249-400-11	CARBON	39	5%	1/4W F
R109	1-247-807-31	CARBON	100	5%	1/4W
R110	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R111	1-216-073-00	METAL CHIP	10K	5%	1/10W
R112	1-216-073-00	METAL CHIP	10K	5%	1/10W
R113	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R114	1-216-049-00	METAL CHIP	1K	5%	1/10W
R115	1-216-049-00	METAL CHIP	1K	5%	1/10W
R116	1-247-863-91	CARBON	22K	5%	1/4W
R117	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R118	1-216-049-00	METAL CHIP	1K	5%	1/10W
R119	1-216-073-00	METAL CHIP	10K	5%	1/10W
R120	1-216-049-00	METAL CHIP	1K	5%	1/10W
R121	1-216-103-00	METAL CHIP	180K	5%	1/10W
R122	1-216-049-00	METAL CHIP	1K	5%	1/10W
R123	1-216-121-91	RES, CHIP	1M	5%	1/10W
R124	1-216-037-00	METAL CHIP	330	5%	1/10W
R125	1-216-037-00	METAL CHIP	330	5%	1/10W
R126	1-216-077-00	METAL CHIP	15K	5%	1/10W (ED8)
R126	1-216-081-00	METAL CHIP	22K	5%	1/10W (ED7)
R126	1-216-069-00	METAL CHIP	6.8K	5%	1/10W (ED4)
R126	1-216-059-00	METAL CHIP	2.7K	5%	1/10W (ED1)
R127	1-216-073-00	METAL CHIP	10K	5%	1/10W
R128	1-249-407-11	CARBON	150	5%	1/4W F(ED1)
R129	1-216-049-00	METAL CHIP	1K	5%	1/10W
R130	1-216-085-00	METAL CHIP	33K	5%	1/10W
R131	1-216-085-00	METAL CHIP	33K	5%	1/10W
R132	1-216-089-00	METAL CHIP	47K	5%	1/10W
R133	1-249-429-11	CARBON	10K	5%	1/4W
R134	1-249-429-11	CARBON	10K	5%	1/4W
R135	1-216-049-00	METAL CHIP	1K	5%	1/10W
R136	1-216-103-00	METAL CHIP	180K	5%	1/10W
R137	1-216-089-00	METAL CHIP	47K	5%	1/10W (ED7/ED8)
R138	1-249-413-11	CARBON	470	5%	1/4W F
R139	1-249-413-11	CARBON	470	5%	1/4W F
R140	1-249-413-11	CARBON	470	5%	1/4W F
R141	1-216-073-00	METAL CHIP	10K	5%	1/10W
R142	1-216-021-00	METAL CHIP	68	5%	1/10W
R143	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R144	1-249-419-11	CARBON	1.5K	5%	1/4W F(ED1)
R145	1-249-421-11	CARBON	2.2K	5%	1/4W F(ED1)
R146	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R147	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R148	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R149	1-216-091-00	METAL CHIP	56K	5%	1/10W
R151	1-216-073-00	METAL CHIP	10K	5%	1/10W
R152	1-216-021-00	METAL CHIP	68	5%	1/10W
R153	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R154	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R155	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R156	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R159	1-216-073-00	METAL CHIP	10K	5%	1/10W
R160	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R161	1-216-073-00	METAL CHIP	10K	5%	1/10W
R162	1-216-049-00	METAL CHIP	1K	5%	1/10W
R163	1-216-073-00	METAL CHIP	10K	5%	1/10W
R164	1-216-049-00	METAL CHIP	1K	5%	1/10W
R169	1-249-417-11	CARBON	1K	5%	1/4W F
R170	1-216-121-91	RES, CHIP	1M	5%	1/10W
R171	1-216-049-00	METAL CHIP	1K	5%	1/10W
R172	1-249-417-11	CARBON	1K	5%	1/4W F
R173	1-249-417-11	CARBON	1K	5%	1/4W F
R174	1-216-081-00	METAL CHIP	22K	5%	1/10W
R175	1-216-113-00	METAL CHIP	470K	5%	1/10W
R176	1-216-089-00	METAL CHIP	47K	5%	1/10W
R177	1-216-105-91	RES, CHIP	220K	5%	1/10W
R178	1-216-089-00	METAL CHIP	47K	5%	1/10W
R179	1-216-089-00	METAL CHIP	47K	5%	1/10W
R180	1-216-089-00	METAL CHIP	47K	5%	1/10W
R181	1-249-413-11	CARBON	470	5%	1/4W F
R183	1-249-413-11	CARBON	470	5%	1/4W F
R186	1-216-049-00	METAL CHIP	1K	5%	1/10W
R187	1-216-049-00	METAL CHIP	1K	5%	1/10W
R188	1-249-417-11	CARBON	1K	5%	1/4W F
R189	1-216-041-00	METAL CHIP	470	5%	1/10W
R191	1-216-089-00	METAL CHIP	47K	5%	1/10W
R192	1-216-089-00	METAL CHIP	47K	5%	1/10W
R198	1-216-089-00	METAL CHIP	47K	5%	1/10W
R199	1-249-413-11	CARBON	470	5%	1/4W F
R201	1-216-069-00	METAL CHIP	6.8K	5%	1/10W (ED4/ED7/ED8)
R201	1-216-083-00	METAL CHIP	27K	5%	1/10W (ED1)
R202	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R203	1-249-438-11	CARBON	56K	5%	1/4W
R204	1-216-041-00	METAL CHIP	470	5%	1/10W
R205	1-247-887-00	CARBON	220K	5%	1/4W
R206	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R207	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R208	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R209	1-216-053-00	METAL CHIP	1.5K	5%	1/10W (ED4/ED7/ED8)
R209	1-216-061-00	METAL CHIP	3.3K	5%	1/10W (ED1)
R210	1-216-057-00	METAL CHIP	2.2K	5%	1/10W (ED4/ED7/ED8)
R211	1-247-807-31	CARBON	100	5%	1/4W
R212	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R213	1-216-069-00	METAL CHIP	6.8K	5%	1/10W (ED4/ED7/ED8)

Ref. No.	Part No.	Description			Remark
R213	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (ED1)
R215	1-259-880-11	CARBON	2.2M	5%	1/4W
R216	1-216-089-00	METAL CHIP	47K	5%	1/10W
R217	1-216-089-00	METAL CHIP	47K	5%	1/10W
R218	1-216-061-00	METAL CHIP	3.3K	5%	1/10W (ED4/ED7/ED8)
R218	1-216-057-00	METAL CHIP	2.2K	5%	1/10W (ED1)
R219	1-216-089-00	METAL CHIP	47K	5%	1/10W
R220	1-216-089-00	METAL CHIP	47K	5%	1/10W
R221	1-247-807-31	CARBON	100	5%	1/4W
R222	1-216-041-00	METAL CHIP	470	5%	1/10W
R223	1-216-295-00	METAL CHIP	0	5%	1/10W
R224	1-216-073-00	METAL CHIP	10K	5%	1/10W
R225	1-249-417-11	CARBON	1K	5%	1/4W F
R226	1-216-295-00	METAL CHIP	0	5%	1/10W
R227	1-216-295-00	METAL CHIP	0	5%	1/10W
R228	1-216-295-00	METAL CHIP	0	5%	1/10W
R229	1-216-073-00	METAL CHIP	10K	5%	1/10W
R230	1-216-081-00	METAL CHIP	22K	5%	1/10W
R231	1-216-049-00	METAL CHIP	1K	5%	1/10W
R232	1-216-041-00	METAL CHIP	470	5%	1/10W
R234	1-216-041-00	METAL CHIP	470	5%	1/10W (ED7/ED8)
R235	1-249-413-11	CARBON	470	5%	1/4W F
R236	1-247-863-91	CARBON	22K	5%	1/4W
R237	1-216-105-91	RES, CHIP	220K	5%	1/10W
R240	1-216-041-00	METAL CHIP	470	5%	1/10W
R241	1-249-421-11	CARBON	2.2K	5%	1/4W F
R242	1-216-113-00	METAL CHIP	470K	5%	1/10W
R301	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R302	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R303	1-216-083-00	METAL CHIP	27K	5%	1/10W
R304	1-216-089-00	METAL CHIP	47K	5%	1/10W
R305	1-216-073-00	METAL CHIP	10K	5%	1/10W
R306	1-216-047-91	RES, CHIP	820	5%	1/10W
R307	1-216-047-91	RES, CHIP	820	5%	1/10W
R308	1-216-079-00	METAL CHIP	18K	5%	1/10W
R310	1-216-035-00	METAL CHIP	270	5%	1/10W
R311	1-249-428-11	CARBON	8.2K	5%	1/4W F
R312	1-216-081-00	METAL CHIP	22K	5%	1/10W
R313	1-216-109-00	METAL CHIP	330K	5%	1/10W
R314	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R315	1-249-395-11	CARBON	15	5%	1/4W F (ED7/ED8)
R315	1-249-389-11	CARBON	4.7	5%	1/4W F (ED1/ED4)
R316	1-216-295-00	METAL CHIP	0	5%	1/10W
R317	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R318	1-216-689-11	METAL CHIP	39K	0.5%	1/10W (ED1/ED4)
R319	1-216-041-00	METAL CHIP	470	5%	1/10W
R320	1-216-075-00	METAL CHIP	12K	5%	1/10W (ED1/ED4)
R321	1-216-077-00	METAL CHIP	15K	5%	1/10W (ED7/ED8)
R321	1-216-075-00	METAL CHIP	12K	5%	1/10W (ED1/ED4)
R322	1-216-097-91	RES,CHIP	100K	5%	1/10W
R323	1-216-097-91	RES,CHIP	100K	5%	1/10W
R326	1-249-429-11	CARBON	10K	5%	1/4W
R327	1-216-073-00	METAL CHIP	10K	5%	1/10W
R330	1-216-083-00	METAL CHIP	27K	5%	1/10W (ED7/ED8)
R331	1-216-296-00	METAL CHIP	0	5%	1/8W (ED7/ED8)
R332	1-249-394-11	CARBON	12	5%	1/4W F (ED7/ED8)
R333	1-216-049-00	METAL CHIP	1K	5%	1/10W
R334	1-216-049-00	METAL CHIP	1K	5%	1/10W
R335	1-216-073-00	METAL CHIP	10K	5%	1/10W
R336	1-249-413-11	CARBON	470	5%	1/4W F
R344	1-216-055-00	METAL CHIP	1.8K	5%	1/10W (ED7/ED8)
R345	1-216-081-00	METAL CHIP	22K	5%	1/10W (ED7/ED8)
R346	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (ED7/ED8)
R347	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (ED7/ED8)
R348	1-216-033-00	METAL CHIP	220	5%	1/10W (ED7/ED8)
R360	1-216-049-00	METAL CHIP	1K	5%	1/10W (ED7/ED8)
R361	1-216-049-00	METAL CHIP	1K	5%	1/10W (ED7/ED8)
R368	1-216-133-00	METAL CHIP	3.3M	5%	1/10W (ED7/ED8)
R370	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (ED7/ED8)
R371	1-216-689-11	METAL CHIP	39K	0.5%	1/10W (ED7/ED8)
R372	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (ED7/ED8)
R378	1-216-083-00	METAL CHIP	27K	5%	1/10W (ED7/ED8)
R380	1-216-041-00	METAL CHIP	470	5%	1/10W (ED7/ED8)
R381	1-216-041-00	METAL CHIP	470	5%	1/10W (ED7/ED8)
R382	1-216-041-00	METAL CHIP	470	5%	1/10W (ED7/ED8)
R383	1-216-041-00	METAL CHIP	470	5%	1/10W (ED7/ED8)
R384	1-216-091-00	METAL CHIP	56K	5%	1/10W (ED7/ED8)
R385	1-216-091-00	METAL CHIP	56K	5%	1/10W (ED7/ED8)
R389	1-216-073-00	METAL CHIP	10K	5%	1/10W (ED7/ED8)
R400	1-216-113-00	METAL CHIP	470K	5%	1/10W
R401	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R402	1-216-049-00	METAL CHIP	1K	5%	1/10W
R403	1-216-041-00	METAL CHIP	470	5%	1/10W
R405	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R406	1-216-041-00	METAL CHIP	470	5%	1/10W
R407	1-216-295-00	METAL CHIP	0	5%	1/10W
R408	1-247-807-31	CARBON	100	5%	1/4W
R410	1-216-073-00	METAL CHIP	10K	5%	1/10W
R411	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R412	1-249-425-11	CARBON	4.7K	5%	1/4W F

Ref. No.	Part No.	Description			Remark
R414	1-216-121-91	RES, CHIP	1M	5%	1/10W
R421	1-216-049-00	METAL CHIP	1K	5%	1/10W
R422	1-216-049-00	METAL CHIP	1K	5%	1/10W
R423	1-216-049-00	METAL CHIP	1K	5%	1/10W
R424	1-216-049-00	METAL CHIP	1K	5%	1/10W
R425	1-216-085-00	METAL CHIP	33K	5%	1/10W
R426	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R428	1-216-041-00	METAL CHIP	470	5%	1/10W
R429	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R501	1-216-037-00	METAL CHIP	330	5%	1/10W (ED4/ED7/ED8)
R501	1-216-045-00	METAL CHIP	680	5%	1/10W (ED1)
R502	1-216-037-00	METAL CHIP	330	5%	1/10W (ED4/ED7/ED8)
R503	1-216-295-00	METAL CHIP	0	5%	1/10W
R504	1-216-295-00	METAL CHIP	0	5%	1/10W
R505	1-216-295-00	METAL CHIP	0	5%	1/10W
R506	1-216-295-00	METAL CHIP	0	5%	1/10W
R507	1-216-053-00	METAL CHIP	1.5K	5%	1/10W (ED4/ED7/ED8)
R507	1-216-055-00	METAL CHIP	1.8K	5%	1/10W (ED1)
R508	1-216-049-00	METAL CHIP	1K	5%	1/10W
R509	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R510	1-216-073-00	METAL CHIP	10K	5%	1/10W
R511	1-216-081-00	METAL CHIP	22K	5%	1/10W
R512	1-216-081-00	METAL CHIP	22K	5%	1/10W
R513	1-216-049-00	METAL CHIP	1K	5%	1/10W
R514	1-216-077-00	METAL CHIP	15K	5%	1/10W
R515	1-216-077-00	METAL CHIP	15K	5%	1/10W
R516	1-216-073-00	METAL CHIP	10K	5%	1/10W
R517	1-216-073-00	METAL CHIP	10K	5%	1/10W
R518	1-216-025-91	RES,CHIP	100	5%	1/10W (ED1)
R600	1-249-417-11	CARBON	1K	5%	1/4W F
R601	1-216-430-11	METAL OXIDE	390	5%	1W F
R602	1-249-417-11	CARBON	1K	5%	1/4W F
R603	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R604	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R605	1-249-414-11	CARBON	560	5%	1/4W F
R606	1-247-815-91	CARBON	220	5%	1/4W
R607	1-247-815-91	CARBON	220	5%	1/4W
R608	1-215-908-00	METAL OXIDE	33	5%	3W F
R609	1-215-857-11	METAL OXIDE	10	5%	1W F
R610	1-249-417-11	CARBON	1K	5%	1/4W F
R701	1-216-041-00	METAL CHIP	470	5%	1/10W
R702	1-216-041-00	METAL CHIP	470	5%	1/10W
R703	1-216-049-00	METAL CHIP	1K	5%	1/10W
R704	1-216-049-00	METAL CHIP	1K	5%	1/10W
R705	1-249-417-11	CARBON	1K	5%	1/4W F
R706	1-216-049-00	METAL CHIP	1K	5%	1/10W
R707	1-212-893-00	FUSIBLE	330	5%	1/4W F
R708	1-216-113-00	METAL CHIP	470K	5%	1/10W
R709	1-216-295-00	METAL CHIP	0	5%	1/10W
R710	1-216-295-00	METAL CHIP	0	5%	1/10W
R711	1-216-295-00	METAL CHIP	0	5%	1/10W
R712	1-216-295-00	METAL CHIP	0	5%	1/10W
R713	1-216-295-00	METAL CHIP	0	5%	1/10W
R714	1-216-295-00	METAL CHIP	0	5%	1/10W
R725	1-216-077-00	METAL CHIP	15K	5%	1/10W (ED7)
R726	1-216-075-00	METAL CHIP	12K	5%	1/10W (ED7)
R752	1-216-295-00	METAL CHIP	0	5%	1/10W (ED7/ED8)
R753	1-216-081-00	METAL CHIP	22K	5%	1/10W (ED8)
R754	1-216-081-00	METAL CHIP	22K	5%	1/10W (ED8)
R757	1-216-073-00	METAL CHIP	10K	5%	1/10W (ED8)
R758	1-216-295-00	METAL CHIP	0	5%	1/10W (ED1/ED4)
R759	1-216-041-00	METAL CHIP	470	5%	1/10W (ED8)
R760	1-216-073-00	METAL CHIP	10K	5%	1/10W (ED8)
R901	1-216-021-00	METAL CHIP	68	5%	1/10W
R902	1-249-407-11	CARBON	150	5%	1/4W F
R904	1-249-408-11	CARBON	180	5%	1/4W F
R905	1-216-025-91	RES,CHIP	100	5%	1/10W (ED4/ED7/ED8)
R906	1-216-021-00	METAL CHIP	68	5%	1/10W
R907	1-216-041-00	METAL CHIP	470	5%	1/10W
R908	1-216-041-00	METAL CHIP	470	5%	1/10W (ED7/ED8)
R909	1-216-097-91	RES, CHIP	100K	5%	1/10W
R910	1-216-097-91	RES, CHIP	100K	5%	1/10W (ED7/ED8)
R911	1-216-097-91	RES, CHIP	100K	5%	1/10W (ED7/ED8)
R911	1-216-295-00	METAL CHIP	0	5%	1/10W (ED1/ED4)
R912	1-216-097-91	RES, CHIP	100K	5%	1/10W
R913	1-216-025-91	RES, CHIP	100	5%	1/10W (ED1)
R927	1-216-295-00	METAL CHIP	0	5%	1/10W
		< VARIABLE RESISTOR >			
RV750	1-241-766-11	RES, ADJ, CERMET 47K (US MPX SEP) (ED8)			
		< SWITCH >			
S100	1-771-155-11	SWITCH, ROTARY (CAM ENCODER)			
S101	1-762-108-11	SWITCH, PUSH (1 KEY) (REC PRF)			
S102	1-692-431-21	SWITCH, TACTILE (POWER) (ED1)			
S103	1-692-431-21	SWITCH, TACTILE (EJECT) (ED1)			
S104	1-692-431-21	SWITCH, TACTILE (REC) (ED1)			
S105	1-692-431-21	SWITCH, TACTILE (CHANNEL +) (ED1)			
S106	1-692-431-21	SWITCH, TACTILE (EASY TIMER) (ED1)			
S107	1-692-431-21	SWITCH, TACTILE (PAUSE) (ED1)			
S108	1-692-431-21	SWITCH, TACTILE (CHANNEL -) (ED1)			
S112	1-692-431-21	SWITCH, TACTILE (ONE TOUCH TUNING) (ED4/ED7/ED8)			
S113	1-692-431-21	SWITCH, TACTILE (SP/EP) (ED4/ED7/ED8)			
S116	1-692-431-21	SWITCH, TACTILE (CHANNEL +)(ED4/ED7/ED8)			
S117	1-692-431-21	SWITCH, TACTILE (EASY TIMER)(ED4/ED7/ED8)			

Ref. No.	Part No.	Description	Remark
S118	1-692-431-21	SWITCH, TACTILE (INPUT SELECT)	
S119	1-692-431-21	SWITCH, TACTILE (CHANNEL -)	(ED4/ED7/ED8)
S120	1-692-431-21	SWITCH, TACTILE (ONE TOUCH TUNING)	(ED1)
S701	1-571-588-11	SWITCH, SLIDE (RF UNIT)	
		< TRANSFORMER >	
T301	1-423-413-11	TRANSFORMER, BIAS OSCILLATION	(ED7/ED8)
T301	1-423-414-11	TRANSFORMER, BIAS OSCILLATION	(ED1/ED4)
T302	1-423-415-11	TRANSFORMER, BIAS OSCILLATION	(ED7/ED8)
		< TUNER >	
TU701	1-693-370-11	TUNER, RF IF (ED1/ED4/ED8)	
TU701	1-693-413-11	TUNER, MOD/IF SOLID TYPE (ED7)	
		< VIBRATOR >	
X161	1-767-855-11	VIBRATOR, CRYSTAL (10MHz)	
X162	1-579-463-11	VIBRATOR, CRYSTAL (32.768kHz)	
* X201	1-760-709-11	VIBRATOR, CRYSTAL (3.58MHz)	
X401	1-767-857-11	VIBRATOR, CRYSTAL (14.31818MHz)	

*	A-6791-589-A	MF-312 BOARD, COMPLETE (ED7/ED8)	
*	A-6791-575-A	MF-312 BOARD, COMPLETE (ED4)	
		**********	
		(Ref.No.1,000 Series)	
		< CAPACITOR >	
C401	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
		< CONNECTOR >	
CN407	1-506-484-11	PIN, CONNECTOR 5P (ED7/ED8)	
CN408	1-691-064-31	HOUSING, CONNECTOR 5P	
		< DIODE >	
D405	8-719-056-07	DIODE SLR-342MCT31 (POWER)	
D480	8-719-109-93	DIODE RD6.2ES-B2 (ED7/ED8)	
D481	8-719-108-12	DIODE RD9.1E-W	
D490	8-719-108-12	DIODE RD9.1E-W	
D491	8-719-108-12	DIODE RD9.1E-W (ED7/ED8)	
		< IC >	
IC401	8-749-011-05	IC GP1U28X	
		< JACK >	
J481	1-766-861-11	JACK, PIN (3P) (LINE-2 IN) (ED8)	
		< JUMPER RESISTOR >	
JR400	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR401	1-216-296-00	METAL CHIP 0 5% 1/8W	(ED7/ED8)
JS494	1-216-295-00	METAL CHIP 0 5% 1/10W	(ED7/ED8)
		< RESISTOR >	
R401	1-216-029-00	METAL CHIP 150 5% 1/10W	
R402	1-216-295-00	METAL CHIP 0 5% 1/10W	
R403	1-216-295-00	METAL CHIP 0 5% 1/10W	
R480	1-216-022-00	METAL CHIP 75 5% 1/10W	(ED7/ED8)
R490	1-216-295-00	METAL CHIP 0 5% 1/10W	(ED7/ED8)
R491	1-216-295-00	METAL CHIP 0 5% 1/10W	(ED7/ED8)
		< SWITCH >	
S403	1-762-196-21	SWITCH, TACTILE (POWER)	

*	A-6791-591-A	NK-11 BOARD, COMPLETE (ED7)	
		**********	
		(Ref.No.1,000 Series)	
		< CAPACITOR >	
C003	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	
C004	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	
C005	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	
C006	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	
C007	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	
C008	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	
C009	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	
C010	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	
C011	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C012	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C013	1-163-243-11	CERAMIC CHIP 47PF 5% 50V	
C014	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C015	1-163-231-11	CERAMIC CHIP 15PF 5% 50V	
C016	1-163-099-00	CERAMIC CHIP 18PF 5% 50V	
C017	1-110-501-11	CERAMIC CHIP 0.33uF 10% 16V	
C018	1-163-989-11	CERAMIC CHIP 0.033uF 10% 25V	
C019	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C020	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C021	1-113-642-11	TANTAL. CHIP 47uF 10% 10V	
C022	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	
C023	1-163-243-11	CERAMIC CHIP 47PF 5% 50V	
		< CONNECTOR >	
* CN001	1-691-183-11	CONNECTOR (BOARD TO BOARD) 13P	
		< DIODE >	
D001	8-719-066-72	DIODE BB135	
		< FERRITE BEAD >	
FB001	1-543-813-21	FERRITE 0UH	
FB002	1-543-813-21	FERRITE 0UH	
FB003	1-543-813-21	FERRITE 0UH	
		< IC >	
IC001	8-759-526-43	IC TDA9874H/V1,118	
		< COIL >	
L006	1-412-945-11	INDUCTOR 3.3uH	

NK-11 POWER BLOCK

Ref. No.	Part No.	Description			Remark
		< IC LINK >			
⚠PS001	1-576-122-21	LINK, IC CCP2E10 (0.4A)			
		< RESISTOR >			
R001	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R002	1-216-073-00	METAL CHIP	10K	5%	1/10W
R003	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R004	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R005	1-216-041-00	METAL CHIP	470	5%	1/10W
R006	1-216-041-00	METAL CHIP	470	5%	1/10W
R007	1-216-001-00	METAL CHIP	10	5%	1/10W
R008	1-216-001-00	METAL CHIP	10	5%	1/10W
R009	1-216-001-00	METAL CHIP	10	5%	1/10W
R010	1-216-001-00	METAL CHIP	10	5%	1/10W
R011	1-216-304-11	METAL CHIP	3.3	5%	1/10W
R012	1-216-304-11	METAL CHIP	3.3	5%	1/10W
R013	1-216-001-00	METAL CHIP	10	5%	1/10W
R014	1-216-295-00	METAL CHIP	0	5%	1/10W
R015	1-216-295-00	METAL CHIP	0	5%	1/10W
R016	1-216-033-00	METAL CHIP	220	5%	1/10W
		< VIBRATOR >			
X001	1-767-897-11	VIBRATOR, CRYSTAL (24.576MHz)			
	1-468-312-11	POWER BLOCK (HS-921SF) (ED1)			
	1-468-312-21	POWER BLOCK (HS-921SF1) (ED4)			
		**********			
		(Ref.No. 3,000 Series)			
		< CAPACITOR >			
⚠C101	1-115-165-11	FILM	0.1uF	250V	
⚠C102	1-115-165-11	FILM	0.1uF	250V	
⚠C108	9-980-012-01	ELECT	150uF	400V	
C207	1-126-964-11	ELECT	10uF	50V	
C401	1-126-967-11	ELECT	47uF	50V	
		< DIODE >			
⚠D102	8-719-312-16	DIODE EG01			
⚠D104	9-980-073-01	DIODE 1SS270A			
⚠D106	8-719-100-30	DIODE RD12ES			
⚠D201	8-719-018-83	DIODE D2S4M			
⚠D401	8-719-052-89	DIODE D1NL40			
⚠D501	8-719-026-52	DIODE 10ELS2			
		< FUSE >			
⚠F101	1-532-388-31	FUSE (2.0A/250V)			
		< IC >			
⚠IC101	9-939-634-01	IC MIP-164			
⚠IC201	8-759-420-19	IC AN1431T			
		< PHOTO COUPLER >			
⚠PC101	8-749-924-84	COUPLER, PHOTO PS2561			

Ref. No.	Part No.	Description			Remark
	1-468-311-21	POWER BLOCK (SR-708) (ED7/ED8)			
		**********			
		(Ref.No. 4,000 Series)			
		< CAPACITOR >			
C112	1-130-495-51	FILM	0.1uF	50V	
C114	1-130-495-51	FILM	0.1uF	50V	
C115	1-130-495-51	FILM	0.1uF	50V	
		< DIODE >			
⚠D107	9-900-534-01	DIODE ERA18-02			
⚠D108	9-900-534-01	DIODE ERA18-02			
D205	9-900-534-01	DIODE ERA18-02			
		< FUSE >			
⚠F101	1-532-388-31	FUSE (2.0A/250V)			
		< IC >			
⚠IC201	8-759-420-19	IC AN1431T			
		< PHOTO COUPLER >			
⚠PC101	8-749-924-84	COUPLER, PHOTO PS2561			
		< RESISTOR >			
R208	9-908-233-01	FUSIBLE	0.47	1/4W	
		MISCELLANEOUS			
		**********			
10	1-783-567-11	CABLE, FLAT (FDS-4)			
52	1-783-566-11	CABLE, FLAT (FMD-12)			
⚠56	1-777-854-21	CORD, POWER			
111	1-783-569-11	CABLE, FLAT (FDM-4)			
114	1-783-568-11	CABLE, FLAT (FMF-23)			
121	1-762-844-21	SWITCH, ROTARY (ED8)			
⚠157	1-782-752-11	CORD, POWER			
704	1-500-144-11	HEAD, FE			
768	1-759-455-11	DRUM ASSY, DZH-71D-R (ED1)			
768	8-839-036-04	DRUM ASSY, DZH-93D/Z-RP (ED4)			
768	8-839-004-02	DRUM ASSY, DZH-94A/ZRP-R (ED7/ED8)			
M902	1-698-971-11	MOTOR, DC (CAPSTAN)			
M903	X-3947-577-1	MOTOR ASSY, CAM			
		**********			
		HARDWARE LIST			
		**********			
#1	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3			
#2	7-682-547-04	SCREW +P 3X6			
#3	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3			
#4	7-685-133-19	SCREW (DIA. 2.6) (IT3B)			
		ACCESSORIES & PACKING MATERIALS			
		**********			
	1-475-613-11	COMMANDER, STANDARD (RMT-V248) (ED1/ED4)			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
	1-475-616-31	COMMANDER, STANDARD (RMT-V247B)(ED7/ED8)	
⚠	1-569-008-21	ADAPTOR, CONVERSION 2P (ED1/ED4/ED8)	
	1-696-592-11	CORD, CONNECTION (NTSC)	
	3-709-133-11	COVER, BATTERY (for RMT-V247B) (ED7/ED8)	
	3-709-322-01	COVER, BATTERY (for RMT-V248) (ED1/ED4)	
	3-861-813-11	MANUAL, INSTRUCTION (KOREAN) (ED7)	
	3-861-815-11	MANUAL, INSTRUCTION (ENGLISH) (ED8)	
	3-861-816-11	MANUAL, INSTRUCTION (ENGLISH) (ED4)	
	3-861-817-11	MANUAL, INSTRUCTION (ENGLISH) (ED1)	
*	3-961-581-01	SHEET, PROTECTION (ED1)	
*	3-979-709-01	CUSHION (ED1)	
*	3-979-710-01	SPACER (ED1)	
*	3-987-410-33	INDIVIDUAL CARTON (ED1)	
*	3-987-419-61	INDIVIDUAL CARTON (ED4)	
*	3-987-420-71	INDIVIDUAL CARTON (ED8)	
*	3-987-421-01	CUSHION (ED4/ED7/ED8)	

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Replace only with part number specified.

9-921-694-11

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Home A&V Products Company

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